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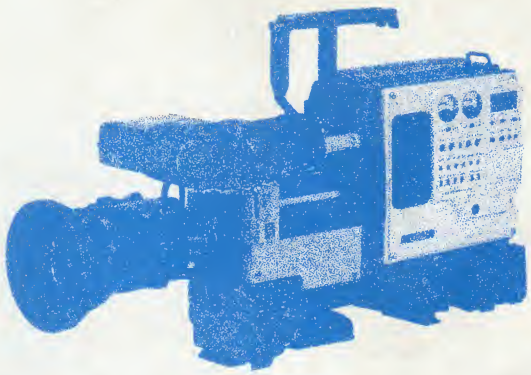
MULTIMEDIA SANDBOX
Creating a Publishing Center For Students

National Geographic Kids Network— How It Helps Kids Do Real Science

SPECIAL SECTION
Technology on Campus

The Multimedia Sandbox: Creating a Publishing Center for Students



It doesn't take big bucks for your students to become multimedia producers. By scavenging equipment from around the school and community, you and your class can invent a high-tech publishing studio on a low-tech budget. (Part I of 2)

By Fred D'Ignazio

Imagine a classroom in which students take on the role of multimedia authors—creating radio shows, movies, books, magazines, advertisements, and slide shows about fractions, prefixes, Spanish verbs, Helen Keller, or any of a variety of other curriculum topics. Imagine productions so fresh and unusual that they are shown to the entire class, to other classes, to the PTA and the local school board; or displayed (and catalogued) in the school library and aired on local cable TV. And, if that doesn't move you, imagine a setting in which the technology involved in such productions—those finicky, malfunctioning machines that seem perversely designed to drive teachers into premature retirement—is managed primarily by students themselves.

Sound unreal? It's not. What you are imagining is a *multimedia classroom*, and teachers in Birmingham, Alabama; Oakland County, Michigan; Blue Earth, Minnesota; Cupertino, California; Nashville, Tennessee; Toms River, New Jersey; and elsewhere have already created such classrooms in their schools.

Multimedia has become a hot new topic in educational technology circles. But if all you think about when you hear the term "multimedia" are the new commercial programs that incorporate computer software with videodiscs (see "Interactive Multimedia: The Next Wave," *Classroom Computer Learning*; September 1989, p. 56), you ought to think again. Some teachers are taking a different approach to multimedia: They are placing the technology in the hands of the *students* and allowing *them* to take on the active role of

Photos from top to bottom:

Students work together to create a desktop video about how volcanoes explode. The camera operator, the narrator, the sound effects person, and the computer artists must coordinate their efforts to create a final product.

As they prepare a science documentary on reptiles, teachers and students use a "boom box," computer, library books, video camera, VCR, and TV.

Students can make a multimedia presentation about any subject in the curriculum. Multimedia projects help students develop their oral and written communication skills and their self-esteem.

MULTIMEDIA

multimedia producers.

The resulting sense of pride among student authors is amazing. It is one thing to "publish" for your teacher's work folder or your family's refrigerator door. It is something else again if your "publication" is an electronic slide show that the administration displays in the school office, or a book that the school librarian reads to young children, or a movie that the kindergarten teacher shows to incoming parents and children on orientation day.

Better Low-Tech Than No-Tech

"Sounds great," you may be thinking, "but we can't afford it." Perhaps you've had fantasies in the past about becoming a "cutting-edge teacher"—until you

(continued on page 26)

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CIRCLE 28 ON READER INQUIRY CARD

Multimedia Sandbox

(continued from page 23)

looked at the resources available in your school. You may be a daring soul who would love to experiment with the newest technologies (desktop publishing, desktop presentation tools, telecommunications, desktop video, hypermedia, and so forth), but the only equipment at your disposal is a 64K computer, a printer, a cobwebby tape recorder, and a VCR and TV, which, from their Victorian styling, appear to be at least a hundred years old.

Take heart. Dozens of teachers are experiencing success with multimedia technologies in schools with scarce resources and skimpy budgets. Their motto: "Scavenge, improvise, and trust." Teachers and students scrounge multimedia resources from around the school, from members of the local business community, and from students' homes; and with it they assemble a publishing center—a sort of multimedia sandbox—where student authors and producers can create publications and presentations about topics they are studying in the curriculum.

Why not try using this *scavenged multimedia* approach to assemble a multimedia center for your school? After all, the secret to being a cutting-edge teacher is not in the megabucks of hardware you use in your classroom, but in the ingenious ways you use the hardware to get kids to learn.

Creating a Publishing Center

There is no blueprint for building a multimedia publishing center. Since

As part of a math activity on place value, children count chips, choose musical notes to represent each number, and type big graphic numbers on the computer keyboard. The teacher keeps track of the numbers' place value on the chalkboard, and a student creates a "how-to" video to show other classes how to re-create the activity.

Great Ideas for

Here are just a few of the exciting multimedia projects that students and teachers around the country have completed:

- A fourth-grade class at West Elementary School in Vestavia Hills, Alabama, produced a weekly "Science Radio" show. The program offered current-events tidbits, tutorials on the weather, math brain twisters, a listener "call-in" segment, and more. Although the resulting program was not actually broadcast over the airwaves, it was a big hit within the classroom where it was "aired" with the help of a tape player. At the end of the year, the students took a field trip to a local radio station and had the opportunity to collaborate with the station's disc jockeys on a program that *was* broadcast to local radio listeners.

- A kindergarten teacher at Cahaba Heights Community School in Birmingham, Alabama, took a small "mini-cam" crew of student producers to a pumpkin patch. The students shot a video of their Halloween pumpkin growing on the vine, being cut, and being hauled back to the classroom. The class then cut open the pumpkin, took out the seeds, and created a jack-o'-lantern, videotaping each step and showing how the pumpkin could be integrated into math activities, including counting, estimation, measuring, place value, and graphing. The students showed the video to other classes and the teacher showed it at inservice workshops.

- A sixth-grade class at the same school created a video yearbook out of segments shot by students at important events during the school year. The class sold dozens of tapes and made enough money to buy new multimedia equipment.

- Another project at Cahaba Heights Community School involved a class of sixth-graders who were studying the environment, toxic waste, and pollutants. The students hiked along a river bank near the school and gathered data. They published their findings in several media, including books, videotapes, and audio recordings, and mailed the resulting projects to local members of Congress and TV stations. The students also made presentations to their parents, to the school board, and to the PTA.

- Middle-school students at Royal Oak Schools in Royal Oak, Michigan, interviewed their classmates on video, asking them what they remembered about Dr. Martin Luther King. The students then developed a printed, video, and slide-show publication on King's accomplishments and his place in American history.

- In Gardendale, Alabama, a class at the Gardendale Elementary School sent a crew of student reporters around the state to research state history and geography. The student reporters were equipped with a tape recorder, a video camera, a Polaroid camera, notebooks, and pencils. The entire class then reviewed all the images, sounds, words, and pictures that had been collected and

Multimedia Projects

assembled them into lessons which they published and shared with other classes and the school PTA.

• A fifth-grade science class at Blue Earth Elementary School in Blue Earth, Minnesota, shot video segments about their community during different seasons in the year. Then they spliced the segments together to show the effect of weather and climate on plants, animals, buildings, and human beings.

• Third-graders at Hewitt Elementary School in Trussville, Alabama, created a video called "The Last Warriors" based on native American folk tales and myths. The class designed backdrops and props using a computerized paint program and then videotaped popsicle-stick characters acting out the story in front of the computer backgrounds.

• Other third-graders at Hewitt Elementary took a trip to the zoo, where they took notes about the animals they saw, videotaped them, and recorded animal sounds. When they returned, the students digitized the animal images on the computer and added descriptive captions and animal sounds. The young authors then created an electronic slide show which categorized the animals by distinguishing characteristics (mammals, fish, large animals, small animals, plant eaters, etc.). They also published an "alphabet book" which was used by the kindergarten class to learn their letters.

• Sixth-graders at Shades Mountain Community School in Birmingham, Alabama, took on the role of political candidates and conducted campaigns for which they created TV and radio commercials promoting their candidacy. They also published promotional flyers, political newsletters, and booklets.

• A teacher at Hope Middle School in Holt, Michigan, created an animated slide show which served as an "electronic flyer" at the school's science fair. The slide show described the science fair's rules, criteria for judging, and entry categories. It was exhibited just inside the front door of the school where everyone could see it.

• As part of a unit on critical thinking, three middle school teachers at the same school created a videotape on decision making. They visited a fire station, interviewed a fire captain and several fire fighters, and added scenes from actual fire emergencies. They then used a graphics program to create several "question" screens which focused students' attention on the key decisions fire fighters have to make when faced with a real fire. When the tape was shown to students, the teachers paused the tape frequently and engaged students in discussion relating to critical thinking strategies employed in fire fighting.

• A fifth-grader at Southminster Elementary School in Vestavia Hills, Alabama, created an animated movie of a black hole in outer space. The project earned her first place in the school's science fair. She wrote the script for the movie using a word processor, designed the animation with a computer-based graphics program, and filmed the results with a video camera while she was reading the script aloud and playing the sound track from the movie *Jaws* on a tape recorder.

• At ACOT (Apple Classroom of Tomorrow) sites in Memphis, Tennessee, and Blue Earth, Minnesota, students digitized images of themselves and sent them over the telephone line to other students in distant schools. Students then acted as "foreign correspondents" for the other schools covering news about their community, region, state, and country. They exchanged digitized photos and published them in student newspapers, term papers, and video documentaries.

• A popular multimedia project with the elementary and middle-grade students at the Toms River Regional Schools in Toms River, New Jersey, has been the creation of "video storybooks." First, each student used a software program with graphics and text features to create a story. Additional computer graphics were generated to introduce the story using a graphics or video titling program. Then, with the help of a "genlock" device (also known as a video overlay card), a computer-generated byline was superimposed over a live camera shot of each student. This was followed by the student's story, read by the student, with background music dubbed in. The process was then repeated for each class member. The resulting 15-minute "storybook" was aired on the school's closed-circuit TV and broadcast to the community on cable through the district's television studio.

• A fourth-grade student at Marble Elementary in East Lansing, Michigan, collected images of whales from videodiscs, videotapes, magazines, and books. He found whale sounds on a record from National Geographic, and stories about whales in *Reader's Digest*, in a whale watcher's handbook, and in the encyclopedia. The student then created and presented to his classmates an "electronic field trip" to the whales' habitat.

• To culminate a unit on business, special education students at Garfield Middle School in Albuquerque, New Mexico, produce videotapes for others in the school. The students apply for and are given jobs as film crew members, interviewers, researchers, graphic artists, script writers, technicians, editors, narrators, and ad writers. Each team then researches a particular business, visits relevant work sites, and produces a videotape to teach fellow students how the business works.

• Seniors in the world studies classes at Forest Hills Central High School in Grand Rapids, Michigan, have been using telecommunications programs, computer databases, and print resources from around the world to create multimedia presentations on global issues. The presentations take the form of videotapes, slide shows with (audio) taped soundtracks, and *HyperCard* stacks.—*F.D.*

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CIRCLE 11 ON READER INQUIRY CARD

each school creates the center from materials it scavenges, each center is different.

You can make your school's first publishing center a school-wide process. Other teachers can donate old equipment which they are not using. The principal can help you find a wheeled cart which was tucked away and forgotten. Students can take home notes ("published" on the computer) inviting their parents to contribute used equipment from around the home. (Many homes are littered with extra tape recorders, "boom boxes," keyboards, old VCRs, and TVs which parents would love to donate to their school—especially if persuaded that their donations would be used for educational purposes.)

Many teachers report that they began their multimedia publishing centers with fear and trepidation. They had barely mastered keyboarding on a Commodore 64 or Tandy 1000, and now, suddenly, they were leading a group of enthusiastic students who were talking about connecting up a computer, a video camera, a boom box, a VCR, and the classroom's record player. Initially the teachers figured they had to know in advance what to do each step of the way. But they were relieved to find out that this was not necessary—that the students were happy to pitch in and learn *with* them.

The best tack to use is to follow the KISS rule—"Keep It Simple to Survive!" You don't need to assemble a full-fledged multimedia center at the beginning. Instead, start by focusing on one or two media and add others gradually as they seem necessary or important. For example, maybe you want to start your young authors with a simple audio project. You and your class can set up a "recording studio" with an old tape recorder or a boom box that a student brings in. Have students read their stories and poems into the recorder's built-in microphone and, voilà, you have "Literature on the Air," a weekly radio program in which budding young authors do readings from works in progress.

Or you can try a simple movie. First, track down your school's video camera. Have your class figure out how the camera works. Put in a blank videotape and let the students create a simple skit on "Fractions in Everyday Life" or

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CIRCLE 44 ON READER INQUIRY CARD

"What Started the Civil War"; or send them to do a video documentary on "Fire Hazards in Our School," "What Happens if You Get Sick?," "Live Animals in School," or "Pollution on Our Playground."

Just remember, no matter what medium you choose to start with, keep it simple. Your goal is not to train the next generation of Steven Spielbergs and Stevie Wonders. You don't need to create elaborate props, costuming, or special effects: Such things take enormous amounts of time, and you will quickly find yourself overwhelmed and a candidate for *multimedia burnout*. Instead, look for ways to create simple "how-to" productions that will enrich your curriculum and improve students' process skills.

Making Connections

Once you and your students are comfortable with a single publishing medium, you will be ready to begin making the sorts of connections between diverse tools that add magic to multimedia production. For example, you can connect the computer to the VCR using a few inexpensive cables and create colorful titles and credit screens for student-produced videos. Or you can save to videotape computer-based slide shows and animated "shorts" for playback at home or over local cable television.

With the help of the microphone on your video camera or another sound source such as a tape or record player, you can add musical soundtracks and special sound effects to multimedia productions. And, if you eventually find yourself with a bit of money to invest in equipment, the purchase of a single extra tool—a video digitizer or an overlay card, for example—can open up a whole new world of possibilities.

Next month, we'll take a closer look at the hardware and software used, the connections made, and the approaches taken in establishing a successful multimedia classroom. ■

Fred D'Ignazio is President of Multi-Media Classrooms, Inc. (1302 Beech St., East Lansing, MI 48823; (517) 337-1549). He conducts teacher workshops all over the U.S. and Canada, and is a national leader in the areas of multimedia, merging technologies, and cooperative learning.

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CIRCLE 36 ON READER INQUIRY CARD

Information Dirt Roads, Bike Paths, and Hiking Trails

Connecting with people and information from around the world is glitzy and thrilling, but it shouldn't distract us from the real benefits we can receive by connecting with people right in our own community.

Think Global, Link Local

We have all heard the hype about the "Information Superhighway" which will soon link people together around the globe. We hear about schoolchildren who are corresponding with electronic penpals in St. Petersburg, Russia, and Okinawa, Japan. Subscribers to national and international computer services are supposed to be able to shop, play games, visit libraries, and have live on-line chats with people all over the world without ever leaving the comfort of their homes.

Connecting with people and information from around the world is glitzy and thrilling, but it shouldn't distract us from the real benefits we can receive by connecting with people right in our own community.

During the last year I have been involved with a local project known as Multi-Media Detectives. The mid-Michigan cable operator for TCI Cable, a Lansing-area bulletin-board for children, TCN (The Children's Network), and my company, Multi-Media Classrooms, partnered with teachers and fifth graders in three school districts. Our motto was "think global but link local." We connected with national services such as America Online and Turner Broadcasting, but we encouraged the children to be research gophers by looking for resources right in their own "backyard."

We were all surprised by how rich that backyard turned out to be. Students and their families knew many exciting people who lived right in our small community. They brought these people into our classrooms and shared them electronically over the cable and computer network we had patched together. And they uncovered many "artifacts" as well—old photos, Civil War souvenirs, family treasures, and so on—which they brought to school and sent across our little network.

Holding a Talk Show with Jim Cash

Linking students in the classroom with famous personalities in their home town was the most exciting way for us to use the cable-TV and computer networks. One of our teachers knew the screenwriter Jim Cash. Mr. Cash has written screenplays for six successful movies, including *Top Gun*, *Dick Tracy*, *Legal Eagles*, and *Sister Act*. Yet his home was only a few blocks from one of the schools on our network, and he was able to electronically visit our classrooms via his computer and modem.

Several times during the year the students scheduled live computer chat sessions with Mr. Cash. They called these chats "talk shows." First Mr. Cash would "talk" online about his career and give tips to kids about writing, then students would ask him questions they had written down before logging onto the network. The technology permitted all five classrooms (four 5th-grade classrooms and one 3rd-grade classroom) in the three districts to participate in the talk show simultaneously.

Mr. Cash, who is incredibly busy, would never have had the time to visit the schools in person, but in order to "appear" on the talk shows, all he had to do was press a button. He never even had to leave his study. He could work on a new movie right up to the time of the talk show, dial the kids and field their questions, then immediately click a button and return to his latest movie project.

The Ernest Green Story

Perhaps our biggest electronic "catch" of the year was Ernest Green. Ernest Green was one of the African American students who became nationally famous when they integrated an all-white high school in Little Rock, Arkansas in 1957. Mr. Green went on to become an advisor to several U.S. presidents; he represented the U.S. at the inauguration of South African president Nelson Mandela; and he recently co-taught a civil rights lesson in a Washington, DC classroom with President Clinton.

Mr. Green came to our state this spring as a speaker at Michigan State University's spring commencement ceremony, and one of the partners in our Multi-Media Detectives project knew a friend of Mr. Green's on the Michigan State faculty. After he heard about our project, Mr. Green agreed to come to the local TCI public-access studio to hold a two-way televised talk show with all the classrooms in our project.

The adults were excited about having Mr. Green talk with the kids in their classrooms because they had been alive during the historic events in Little Rock in the 1950s. The amazing thing was that the kids were excited too. But why? It wasn't as if they were going to speak with a current media star like Michael Jordan or Shaquille O'Neal.

The students were excited because they had seen a biographical movie about Mr. Green entitled "The Ernest Green Story." The movie appeared on the Disney Channel early in the year. And TCI Cable sent out copies of the movie to each of the classrooms a couple weeks before Mr. Green visited the local studio. The part of Ernest Green in the movie was played by a talented African American actor who had starred in the recent movie *Boyz 'N the Hood*. The Ernest Green Story was dramatic, tense, and realistic. It made history come to life for students who were born 20 years after the original event in Little Rock. The students identified with the plight of Mr. Green in the movie and his African American friends. After watching the movie they felt Mr. Green and his friends had been true heroes in standing up to an entire community just to receive their basic rights.

They couldn't believe that they were going to meet THE REAL ERNEST GREEN!

The biggest surprise to the students during the talk show with Mr. Green was how old he was! The historical events in the movie had seemed so real to them that the students regarded them as current events. Mr. Green had to patiently explain to the 5th-graders that the incident at his high school had occurred 37 years ago!

Your "Local" Is Everyone Else's "Global"

One of our biggest insights in this project was that what was "local" for us and therefore boring and normal was "global"—faraway, exotic, and exciting—for kids in other cities, countries, and other schools. Local things that kids grew up with their whole lives that once were invisible because they were so close, all of a sudden came into focus when students realized these same things would be "hot" items for students in distant schools and remote communities.

These same ho-hum local resources also became more "cool" when they were broadcast over cable-TV or transmitted via the computer bulletin board to the other classrooms in our project. For example, a parent of one of the students was an avid Civil War buff and reenactor. He came to class one day dressed in his Civil War uniform and carrying his Civil War marching and fighting gear. The students in the fifth-grade classroom shared him with all the classrooms on the network by pointing a video camera at him while he demonstrated all his neat stuff. He was a star! Students and teachers in the other classrooms watched in fascination for almost two hours as he showed how a real Civil War soldier actually lived, fought, and survived on the battlefield.

It was a further incentive to students that they could ask the soldier personal questions over the two-way TV link. For all of us who were there that day it was like talking with a real, live, breathing Civil War soldier. It felt as if we had boarded a time machine and zipped 130 years into the past, right into the middle of the Civil War. The soldier always stayed in character, and pretty soon we all accepted that he was real, and somehow we were able to talk to him live!

One-Way TV Is Boring

One of the most important lessons we learned in our project was how much children liked to interact with TV, once they were given the chance. As adults we hold the stereotype that children "zone out" and become couch potatoes when the TV comes on. Actually this is not the case. Unless a TV program was extraordinarily interesting (as in the case of "The Ernest Green Story"), students in the classrooms in our project quickly lost interest in the TV and began talking, teasing their neighbors, and looking for excuses to leave their chairs and walk around their room. Even live, two-way TV was disappointing when the student groups were too large. If the students weren't given an opportunity to talk directly with their friends in other classrooms or with the experts on TV, they showed their boredom after only a few minutes into an event.

A "proof" of the success of our "Think Global, Link Local" philosophy was when Turner Adventure Learning held an electronic field trip to the Battle of Gettysburg. The field trip was extremely well done and featured live national television coverage to classrooms broadcast from the historic Gettysburg battlefield in central Pennsylvania. The program featured child actors who portrayed historical characters from the original battle. It also allowed students across the U.S. to ask questions of the CNN NewsRoom commentators onscreen via phone, fax, and America Online.

What was "local" for us and therefore boring and normal was "global"—faraway, exotic, and exciting—for kids in other cities, countries, and other schools.

But, for our students, this wasn't enough! They were used to being able to turn on their television and interact, live, with students in other classrooms or famous people like soldiers and civil rights pioneers. Or they could turn on their computer and hold lively "talk shows" with famous screenwriters like Jim Cash. On the national field trip our students submitted dozens of questions via modem and not a single one was answered. On the other hand, when they participated in the local TV and modem talk shows, every one of their questions was immediately answered, and each student was featured on camera or they were identified by their own name. On the national network, they were anonymous—but in their local project, the spotlight shone on them alone!

On the national field trip our students submitted dozens of questions via modem and not a single one was answered. On the other hand, when they participated in the local TV and modem talk shows, every one of their questions was immediately answered.

Would the Real "Dr. R" Please Stand Up?

As part of our project, students frequently asked their parents to help them scout out local experts who would participate in our project. The expert could visit the classrooms via modem like Jim Cash. Or they could visit the classrooms via two-way cable-TV like Ernest Green. Or they could even visit via speaker phone or live like Dr. Roger Rosentretor, a Civil War historian, did one morning midway through the project.

That's just what Dr. Rosentretor ("Dr. R") did during the three days of the Gettysburg electronic field trip. He came to our classrooms each day after the field trip was broadcast over our classroom TV, and he told the kids colorful stories that made the incidents shown on TV seem more personal and understandable to our fifth graders.

One of our proudest—and funniest—experiences of the entire year occurred during a classroom visit by Dr. R.

The students were online chatting with other students from all over America in the "Studio Room" of Turner Adventure Learning. The subject was the Civil War and the importance of the Battle of Gettysburg. But the conversation was going nowhere, and the students were clowning around and driving the official Turner chat moderators crazy.

That's when Dr. R sat down at the computer in Mrs. Lafkas' fifth grade classroom and logged on. He introduced himself as an historian, a specialist on the Battle of Gettysburg, and Editor of the *Michigan History Review*, the largest state history review in the U.S.

The Turner moderators were delighted to see him. "We're so glad you're online, Dr. R!" they wrote. "We would like you to officially lead our discussion on the Battle of Gettysburg." Dr. R complied, and the discussion took off. All the students and teachers in classrooms across the country immediately began feeding him their personal questions about the Civil War. Dr. R's knowledge proved to be encyclopedic and extraordinarily funny. He had a witty or poignant story to tell about almost every incident, event, or personality in question. His answers to the students' questions were brief, factual, and intriguing. The Turner people wrote him while he was online and credited him with "saving" the discussion!

Then, suddenly, Mrs. Lafkas pulled Dr. R away from the computer. He had to begin meeting privately with the student "detective" teams to help them with their research projects. The teams and Dr. R moved across the hall to an empty classroom leaving the rest of the class to continue the electronic chat online.

That's when one of the 5th-graders still in the room noticed that the other students around the country participating in the America Online chat were still flooding Dr. R with questions. "Hey!" said Mrs. Lafkas' students. "They still think Dr. R is online."

What happened next was the greatest proof of our project's success. Without consulting their teacher, Mrs. Lafkas' students grouped around the computer and read the incoming questions aloud. "Did General Pickett charge along with his men on the third day of the Gettysburg Battle during the famous 'Pickett's Charge?'" "How many people were killed during the Battle of Gettysburg?" "Were there any women killed?" "Were blacks or native Americans killed?" "Did any children fight at the Battle of Gettysburg?" On and on, the questions kept coming.

Mrs. Lafkas' students formed ad hoc teams and began researching the questions as they came in. They grabbed their Civil War research books. They discussed the videos they had watched in class. They quizzed Mrs. Lafkas. They even ran across the hall and stuck their head in the room and fed a couple questions to Dr. R, then dashed back to the classroom and breathlessly dictated his answers to a classmate who was at the computer keyboard.

Mrs. Lafkas' students typed their answers as quickly as they could into the computer and fed them via America Online out into the national chat session.

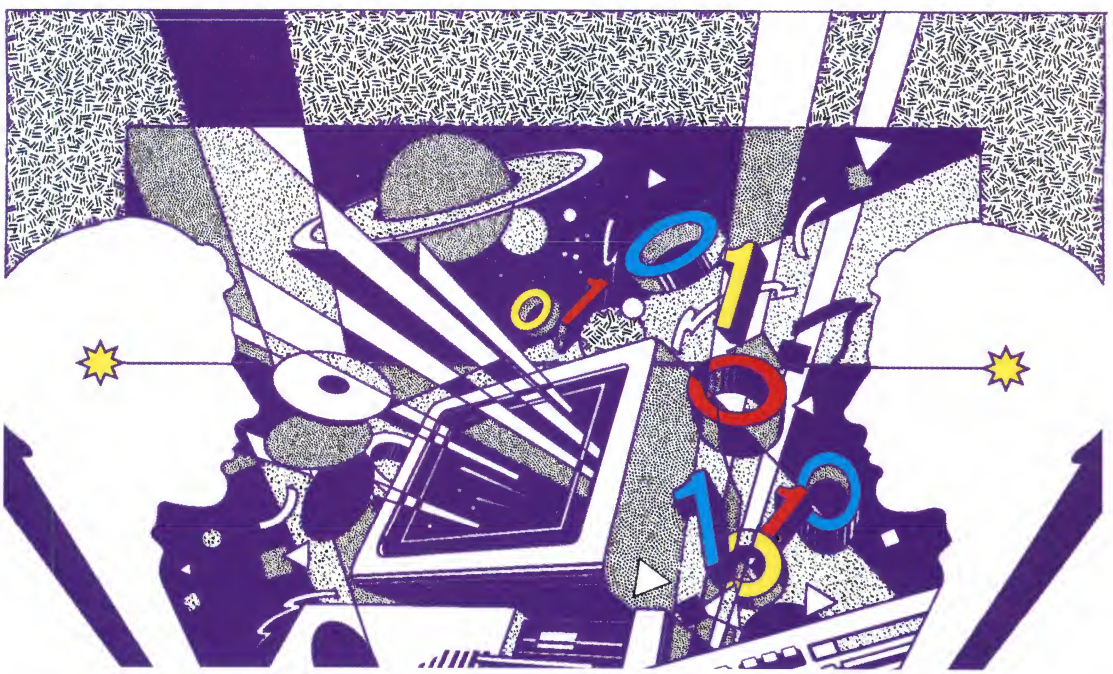
"Thank you, Dr. R!" other students around the country replied. "You sure know a lot, Dr. R!" they wrote.

And Mrs. Lafkas' students just glowed!

Once Mrs. Lafkas discovered that her students were "subbing" for Dr. R, she decided that it would be a good time to conclude the online chat. She was very proud of her students and showered them with praise for their "just-in-time" research. But she was a little worried that the teachers in classrooms around America might be wondering why the knowledgeable and erudite Dr. R had suddenly begun spelling like a 5th-grader! ■

[Fred D'Ignazio, Multimedia Classrooms, Inc., 4121 Okemos Road, Suite 24, Okemos, MI 48864.]

Distance Is a State of Mind: Virtual Reality on a Shoestring



Virtual space does not have to be a complex multimedia experience. Instead, it can be created simply, just by linking up two persons' voices.

When we talk with someone we care about on the telephone we quickly enter a virtual space of intimacy created from the familiar sound of the person's voice, their instant response to our voice, and the power of our imagination. Our imagination is so powerful that it can weave an imagined real-world "meeting" from the slender thread of two human voices. We may be having our phone conversation in the kitchen looking out a window at a playset in the backyard, but we no longer see the backyard. Our mind's eye takes over and we see a constructed image of the person we are talking to, and we see the events, stories, and people who appear like actors on a stage as they are introduced in our conversation. What we are constructing is a virtual play, a radio drama of the 1930s and 1940s, purely from the sounds coming out the ear piece of a small nondescript slab of plastic.

The telephone is popular because it is so easy to enter this virtual space. We can substitute the "shadow" senses of our imagination for our real-world eyes, ears, bodies, etc. during the course of a conversation. During a good conversation, physical distance between you and your friend, your parent, or your child disappears and becomes merely a state of mind. Conversely, if the conversation turns sour, then the physical distance between the two of you may seem trivial compared to the emotional distance that now separates you.

Telephone conversations help us think about how we might create virtual space, virtual meetings, and virtual conversations on a shoestring in a classroom:

1. Virtual space does not have to be a complex multimedia experience. Instead, it can be created simply, just by linking up two persons' voices.
2. In virtual space emotional (or imagination-centered) distance becomes more important than real geographical distance. The illusion of closeness and intimacy with another person can be intellectual, emotional, and even sexual.
3. In virtual space one's normal sense organs (including eyes, ears, sense of taste, smell, touch, etc.) temporarily become disabled if they are not needed to participate in the virtual experience This disabling of the external senses is done deliberately by the mind to remove distractions so the mind can focus on believing in the intimacy and reality of the virtual experience.
4. At the same time that the external senses are disabled,

internal "conceptual" senses spring to life. In a phone conversation, for example, we may not be able to see the other person, but we substitute a remembered or invented image in front of our mind's eye while we are talking with that person. Similarly, if the person talks about an experience involving the senses, we participate vicariously by imagining how a meal tasted, how it felt to climb a steep hill, suffer a headache, or smell the fragrance of a flower. In a good conversation over a telephone, these vicarious experiences can be so powerful that they may be remembered afterwards almost as vividly as if we had lived them ourselves!

5. The experience of virtual intimacy (or tele-intimacy) is experienced by almost everyone who uses a telephone. This indicates that all humans are born with an imagination and (imagination-based) shadow senses to construct a virtual experience out of extremely limited sensory cues.

Snail Mail, Distance, and Simultaneity

The lowly telephone demonstrates that virtual space and virtual intimacy between two human beings can be created simply and inexpensively. Are there other low-cost forms of telecommunications that also create virtual space for people?

Let's take the case of S-mail ("snail mail"–regular paper mail). S-mail does not use one of our original, non symbolic "power senses" such as sight, sound, smell, and touch. It is primarily conducted in secondary level symbols– or words–in which humans embed meaning. Unlike the primary senses that sense reality directly (for example, the heat of a fire, the impact of a hammer on our thumb, the distressing odor of decaying garbage, the horrific sounds and sight of a saber-toothed tiger!), words must first be decoded in order to have meaning.

On the other hand, once we learn to read fluently then the words tend to "morph" almost instantly into the sights, sounds, and events that they describe. And powerful words can map themselves into vivid real-world experiences through the mental alchemy of our imagination.

Which Came First–Virtual Meetings or Words?

In all the eons of our biological past, we communicated face to face–or not at all. That is, we had to simultaneously be in the same place at exactly the same time or communication could not take place. In our recent past, when written symbols and language were invented we were able to break the lock of simultaneity upon human communications. People separated by gulfs of distance and time could communicate with each other and share intimate experiences, ideas, and emotions.

Letter writing, even with a quill pen or papyrus, has always been a virtual act. In the act of correspondence, two people enter an imagined virtual space–a room all their own. In this room they have a conversation. With primitive technology it took many months or years for this conversation to unfold. But if the conversation were authentic and meaningful to the participants then the gaps in time didn't matter. The other person could be called up through the correspondent's imagination at will. Every time they read the letter the other person would return to the room. Their image would become clear in the mind's eye. Their voice would come alive in the mind's ear. A strong physical sense of closeness–the other person's presence–would be the reward for using the imagination to reconstruct the virtual room.

Letter writing, even with a quill pen or papyrus, has always been a virtual act. In the act of correspondence two people enter an imagined virtual space– a room all their own.

Am I Here With You Now?

What I've just described above is the same imagination illusion that your mind conjures up when you are reading this article. As you read these words where are you? Right this instant! You may be on a plane, in a boat, lying in bed, or on the john, but that's only physical reality. And physical reality recedes when your shadow senses go to work and reconstruct a new meeting place inside your mind. What kind of virtual room have you built? What kind of voice do I have when you read these words? Do you imagine what I sound like or look like, or am I disembodied, tumbling in a formless free fall?

In fact, I'm on an airplane, a Beechcraft 1900C (the world's tiniest commercial passenger plane), flying over a farmer's field in South Central Illinois, on my way to Quincy, Illinois, on the banks of the mighty Mississippi. I'm wearing my blue shirt with my red Koala tie, and I'm a little punchy after the mad dash I made to the Detroit Airport from my hometown in Lansing, Michigan.

Did you guess it right? Do you care? Does it matter what I look like?

Of course not. What really matters is that when you read my words (perhaps months after I typed them into my little notebook computer on the tiny plane) you feel like we are having a conversation, and we are "someplace" together, talking personally, one on one, about things that matter.

What makes an experience "virtual" arises out of our most important "cyber-organ" of all: our imagination.

From S-Mail to E-Mail

Next let's return to the present and think about what is already possible. You can now write to me on the Internet (I'm dignazio@msen.com), and we can begin a real correspondence, not just an imagined one created when you read the words on this page (or screen).

E-mail is actually a pretty powerful generator of virtual reality. All that counts is that both parties write back within a certain time period–say one or two days. If this is done regularly, pretty soon the illusion builds up that you are in a room having a conversation. This illusion is handled with printed text on a printed (or electronic) page and is more like letter writing than carrying on a phone conversation. But it is even more virtual than a phone conversation because the two parties seem to be in the same virtual room no matter where they are in space or time. The "appointment" the two make with each other is not based on a place or hour. The only requirement is a regular conversational "return" (figuratively batting the tennis ball back to the other side of the net) to keep the conversation active and the illusion of a virtual meeting intact.

From E-Mail to I-Mail

Now imagine that with the emergence of the information highway, magazine articles like this one become Instant, real-time, and Interactive (hence the term "I-Mail"). Imagine that the moment I write these words–"From E-Mail to I-Mail"–you see them appearing on your computer screen, no matter where I am and no matter where you are. Imagine too that with I-Mail you have the opportunity to read a paragraph or two of my article and then instantly respond–even while I am still up here flying in my little plane over the Mississippi!

I had an experience similar to "I-Mail" yesterday when I appeared in a telepanel with fellow multimedia gurus mediated by an editor from Scholastic, Inc. on America Online. The moderator and the panelists entered "Scholastic Hall" together, said hello, and immediately began talking about the future of multimedia in education. We watched each other type answers to the moderator's questions, and I became more and more "wired" because I truly felt as if I were in the same room with all these people, and in front of a large audience. My heart was beating quickly, I was short of breath, just like before a real speech or panel. And my mouth grew so dry that I downed two soda pops and a bottle of fruit juice in the first ten minutes of the panel.

Welcome to Virtual Reality, Fred!

The cyber-room we entered–purely through text, – seemed very real. What made it also virtual (plastic, fantastic, elastic) was that while I was sitting with my fellow panelists at the table responding politely and taking turns, I was also able to clone myself from my panelist body (persona). I was soon running around the room, crawling under the table, passing notes, throwing spitballs, and whispering in the ears of almost everyone in the room–my panelists, the moderator, even the audience.

I was able to do this through simple "command-I" keystrokes which sent "instant" private messages to anyone who was in Scholastic Hall. As soon as I realized I could do this I started up windows for everyone in the hall and kept them active around the main window of our panel's conversation. The panel window now became "foreground" mode and a new "background" mode (the instant messages) was born. I was simultaneously able to participate in conversations in both modes, and I had a ball! Even while I was making dignified statements about the future of multimedia in the foreground mode I was slipping around in the background mode with gossipy little comments, puns, jokes, and prankish remarks. It felt as if I was in a new kind of room–a hive or honeycomb–with several compartments, each with an ongoing conversation, and I could flit like a bumblebee (Fred the Bumblebee) taking part in all the conversations at once. (For an extreme extrovert like me, it was a moment of pure joy!)

VR on a Shoestring

This column has been a rambling exploration into various "low-tech" and "low-cost" forms of virtual reality, including the telephone, normal mail, E-mail, and a new kind of emerging instant, interactive mail which is now taking shape in online conversations, forums, and chat sessions.

The lesson here (if there is a lesson) is that VR, or virtual reality, is not just the stuff of power gloves, VR helmets with stereoscopic 3-D goggles, and multimedia computers. What makes an experience "virtual" arises out of our most important "cyber-organ" of all: our imagination. If a medium puts us in touch with another human being in a meaningful situation, our imagination seems to kick in automatically and persuasively so that even simple printed or spoken words can act as catapults that launch us into a virtual world. ■

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Paper Training Sparky The Dog

We like to impress ourselves with our use of technology. But often we're just pushing virtual paper.

The other day, I attended a speech given by a nationally renowned demographer. At the end of the speech, I had the opportunity to talk with him for a few minutes. I introduced myself as a technology writer, and the demographer nodded, saying he used a computer every day. His profession, he said, tracked large groups of people—their movements, their aging, and their behavior—and he considered the computer to be his single most valuable tool. On the other hand, he was alarmed by the pace at which new, more powerful computer chips were being introduced. "All I need," he said, "is enough power to crunch my numbers and store and manipulate some data. And I'm a demographer. Who could possibly need more computer power than I?"

As a multimedia enthusiast and computer educator, I was stunned. It took me a few minutes to summon enough courage to respond to his challenge. "Excuse me, sir," I finally said. "If you'll get in my car, I could drive you down the road to a local elementary school and show you some fifth graders doing a multimedia history project for our college museum who are desperate for more computer power."

"What could they possibly be doing?" the demographer asked.

"They're part of a multimedia detectives project which gathers nontraditional resources to research historical mysteries. As part of their research on the Civil War, they're digitizing recorded voices from Civil War soldiers and ex-slaves. They're scanning in photographs passed down over generations by their families. They're videotaping live reenactments of dramatic events and personalities from the war. They're orally narrating eyewitness accounts of the war written by women, blacks, Southerners, and soldiers. They're digitizing artifacts from the war uncovered in family attics. They're interviewing local historians and pulling in pictures and sounds from libraries on the Internet. They're…."

"Enough!" said the demographer, smiling. "You made your point. Maybe I should come see what these fifth graders are up to."

Multimedia Cuisinarts

We adults, like the demographer, live in a world of text (numbers and letters), and we are tickled pink with the way the computer zips along shuffling our words, sentences, and columns of numbers. But we are almost unaware that a new age of knowledge is dawning in which computers will be required to push around digitized movies, voices, beautiful paintings, and symphonies as well as words and numbers. Knowledge processors of the future will have to be Multimedia Cuisinarts that take images, sounds, and numbers and slice them, dice them, blend them, and puree them. To do this in real time, they will have to be far more powerful than the wimpy little word processors most adults are using today.

A Narrow Trickle of Text and Talk

In my multimedia speeches and demonstrations, I spend just as much time running up and down the auditorium aisles, Geraldo-style, as I do pressing buttons and switches up on stage. Since I am probably 75 percent clown, it seems natural in my speeches to turn my body into a comic, visual metaphor.

"It's so hard," I tell audiences, "for us adults to see things through the eyes of our children. "We grown-ups are hooked on words. And, as the older and presumably wiser human beings in any room, we're great at frontal lecturing. We stand in front of young people and become a fountain of words, a stream of words, spoken one at a time, dribble, dribble, dribble, pointed at their young ears.

"We assume that if enough young faces are pointed back at us, the stream of words is flowing between their ears into their brains, and we conclude that learning has taken place. But we're fooling ourselves. As good teachers already know, teaching isn't talking, and learning isn't listening—especially when your learners are all fish."

That's the point when I jump off the auditorium stage and go running up and down the aisles, arched forward, my hands folded together like the prow of a ship. "Our children," I say as I run, "are fish swimming through a sea of electronic media. This is their world of knowledge, their habitat. And then each morning they are tossed through their classroom door into our world of words. No wonder they thrash and struggle! They can't breathe! They are like fish beached on a dry, arid shore. We try to help them, but all we can offer is this narrow trickle of text and talk."

(I point my "ship" down a new aisle and run even faster, my hands pointed forward.) "Text and talk," I say, weaving back and forth, "text and talk. We think we are nourishing our children, and all the while they are suffocating."

Cultural Blindness

We are not doing this on purpose. Most of us adults are not naturally mean, despite what many kids think. We really are people of good will. But we may be terminally blind.

As with any cultural transformation, the inhabitants of the old culture (the world of printed words) can't see the new culture coming. And the inhabitants of the new culture (electronic media) can't understand why most of their world is so foreign to the older people they see everywhere around them.

Let's face it, we big people love books. We have spent our lives in the company of books. If you added up all the books we've stuck our noses into, you'd be amazed. Even worse, add up all the inches of text we've followed, line after line, page after page, as we've read books over 20, 30, or more years! We've spent our lives in "book school" learning this simple equation: KNOWLEDGE = BOOKS. And school is the center of this theory of knowledge. The specialists of book-centered knowledge teach in the schools. Their methodology is straightforward: If you want to know something, find it in a book.

Enter Sparky the Dog

And what are books made of? Paper!

This is where I whip out a newspaper and throw it onto the floor. I fall to the floor and begin happily sniffing the newspaper, nuzzling it and talking to it in dog language. It's clear that I really love this newspaper!

As I'm scurrying around on the newspaper I continue talking. "I'm an author," I say between barks and snorts. "That means I love words. I adore paper. In fact, you might say I'm paper trained."

At this point I act as if I'm being led away from my paper on a leash. I resist the leash and gaze back longingly at the newspaper. I whimper and yip pathetically as I am dragged away from my paper. "I can't stand being away from paper," I say between growls and moans. "If I have to leave the world of paper I get anxious and uncomfortable, like Linus being separated from his beloved security blanket."

I pretend I yank my head so hard that the leash snaps. I am now 20 feet away from my newspaper on the other side of the auditorium stage. Joyously I scamper on all fours back to the paper. I plop down on the paper and wag my tail against the paper. "Ahhhh," I say with a big doggy grin on my face. "Paper... mmmmm... I am so relieved."

I Am So Confused!

I jump up. I'm a human again. "I may be the silliest Sparky the dog in the room," I say, looking around the auditorium. "But I'll bet I'm not the only one who is paper trained. And this paper training is shaping up to be a serious disability in the world of the future, as knowledge is packaged in new nonpaper formats. We book lovers may feel very strange in a world where knowledge no longer comes on paper, neatly and politely, one word at a time, but instead is crammed inside a shiny silver platter or whizzes onto our TV sets and computer screens from libraries and databases around the world, under the seas, or from outer space. This is a brave new world for Sparky the dog!"

Then I show a video from the MCI Corporation which talks about the Internet and hypermedia libraries of the near future. An actor dressed as a Renaissance scholar lights a candle and enters into the darkened library while classical music plays in the background. He wants to look up information about Columbus' voyage to explore a new world. A modern woman, the librarian, tries vainly to help him, talking about hypertext and multimedia archives stored in "infinite digital preservation in real-time." But the poor man shakes his head, bewildered, and says he'd love to understand the new scheme for knowledge, but he fears he will be in his grave before he learns to navigate through this new world.

Let's face it, we big people love books. We've spent our lives in "book school" learning this simple equation: KNOWLEDGE = BOOKS.

We are this old man. All our paper training has left us quite unprepared for the new ways in which knowledge will be packaged, dished up, and devoured. We have to decide really soon whether we are really in love with books (the comfortable old "wrapper") or with the ideas, the life stories, the treasures found inside.

We have to decide really soon whether we are really in love with books (the comfortable old "wrapper") or with the ideas, the life stories, the treasures found inside.

But there is hope. The trick is to take the first baby step into this brave new world of our children. Or is it really a "step?"

"Do-It-the-Hard Way Fred"

I tell the audience about my challenge by a Florida educational TV producer, Jane Matheny, to transform my "paper" metaphor of children swimming through a sea of media into a physical real-world metaphor.

One spring morning, with Jane and her camera person David at a Florida poolside, I stripped off my clothes to my swim trunks and revealed my not-so-Schwarzenegger torso underneath. While I was disrobing I talked about the sea of media which represents the world of knowledge in the future.

While I was spouting words, I was in my medium. But now I had a problem: I was supposed to keep talking and *also* jump into the pool! (Kind of like walking *and* chewing gum). This is not a hard problem for many people, but for a person nicknamed "Do-It-the-Hard-Way Fred," it was a fearful challenge.

Seventeen film "takes" later and after nine painful bellyflops, the producer said she'd had enough. With some skillful editing, the video segment eventually aired on Florida public TV. The shoot at poolside was only supposed to take half an hour, but the producer hadn't counted on all the times I would get water up my nose while I was pretending to be a "child swimming through a sea of electronic media." Choking and coughing I would rise from the water like a whale breaching, and we'd have to do the whole thing all over again, starting with another belly flop.

It was almost the end of me! But the piece was a success. In it I asked teachers to come with me and "jump into this new sea of electronic knowledge." We may almost drown, I said, and we may have to leave our paper high and dry on the shore, but the time has come for us to decide. In the multimedia world of the future, who will be our role model? Will it be Willy the whale who leaps to freedom, or good old Sparky the dog? ■

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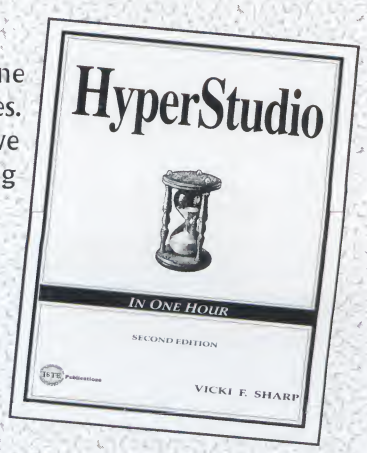

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INTERNATIONAL COMPUTER NEWS

Teachers Lynn Murphy (left) and Nancy Rentschler (right) at Hewitt Elementary School, Birmingham, Alabama.

SCHOLASTIC

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TAKE 1
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CAMERAMAN Lynn Murphy
PROD. CO. T&C
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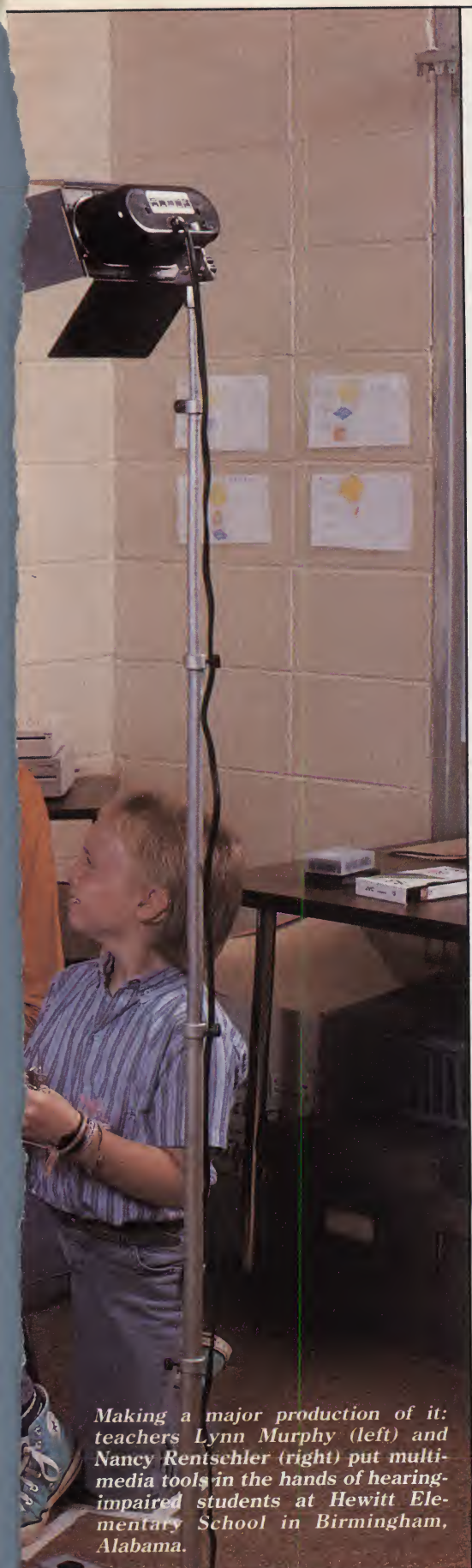
VIDEO



Making a major production of it: teachers Lynn Murphy (left) and Nancy Rentschler (right) put multimedia tools in the hands of hearing-impaired students at Hewitt Elementary School in Birmingham, Alabama.

RICK BARRICK

Where can students and teachers learn together, using computer-linked video, audio, and print tools? Take a look inside our . . .

Multi-Media CLASSROOM

Before the summer of 1986, most teachers here at Hewitt Elementary School in Birmingham, Alabama were afraid to touch a computer. They were glad that most of the gadgets were locked up in the lab — a complicated place they just had to send students into while they themselves could stay out! Teachers who were interested in technology were considered a little strange.

That was before Fred D'Ignazio's "computer" workshop (see box on page 24) for schools in our county. Several teachers at Hewitt Elementary decided to be brave and attend the session. What could they lose? If nothing else, it would look good on their professional development record!

Fred's workshop was three days long — and what the Hewitt teachers learned in those three days was phenomenal. Computers and software were the center of the workshop, but scattered all over the room were video cameras, VCRs, keyboards, and tape recorders. Fred called this array of technology his "sandbox" and invited us to get in and play — to be kids again and take chances.

After the workshop, word got around Hewitt about this new, fun approach to teaching dry subjects in the classroom. The main emphasis

BY NANCY RENTSCHLER AND LYNN MURPHY

Work in progress: Lynn Murphy coaches Hewitt's young multi-media producers.

was on using high-tech equipment to teach and reinforce skills outlined in the school curriculum. In the process, kids actually used the technology themselves, and then turned around and taught it to other kids.

On the basis of what we've learned together at Hewitt, here are some suggestions for putting multi-media to work in your classroom. Be forewarned, though — once you start to think in multi-media terms, you'll begin to see possibilities for projects in every area of the curriculum. You'll get hooked. You'll become a "multi-media maniac."

GET TO KNOW YOUR MULTI-MEDIA TOOLS

Although multi-media feels like an all-new approach to learning, the tools involved are most likely somewhat familiar to you and your students. Your school may already own (or have access to) all of the equipment you'll need to start producing multi-media projects. (For a complete listing of tool alternatives, see box on page XX.)

• ***Start with the computer.*** The main multi-media tool is a computer, along with a printer and software. The Hewitt Elementary Multi-Media project has been partially supported by Apple Computer Corporation from the beginning, so our equipment consisted of Apple IIe's, IIc's and one IIGS. Some of the computers were provided by Apple, but the IIc's and IIGS were personally owned by three of the teachers involved and one IIe was borrowed from a generous father of another teacher in the project.

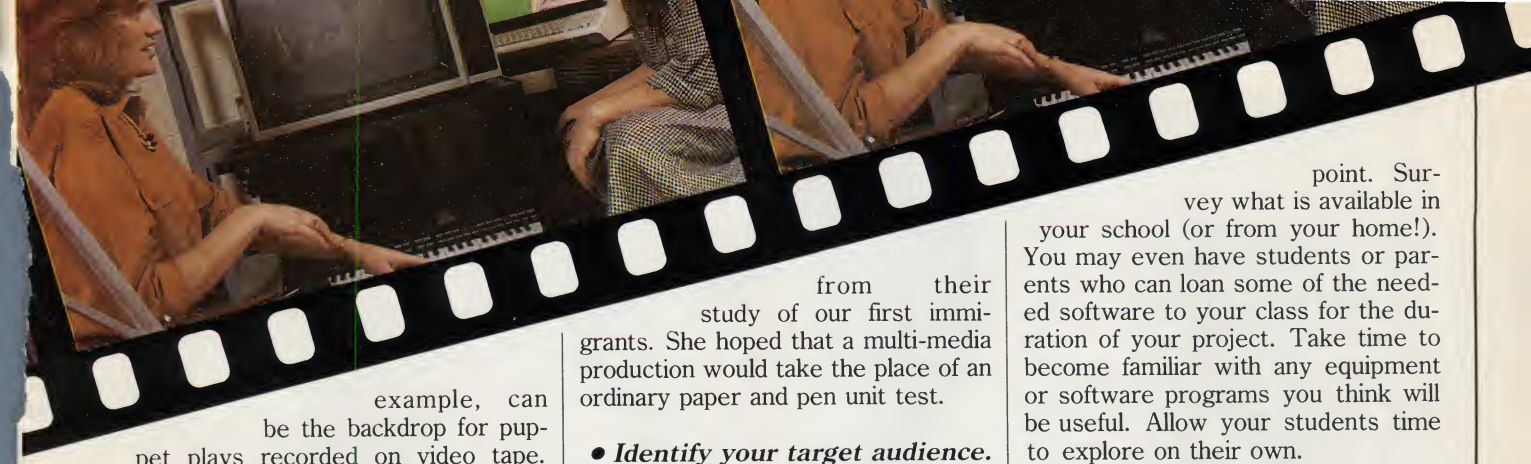
The software programs we use most often at Hewitt include *The Print Shop* (Broderbund), *PrintMaster* (Unison World), *SuperPrint* (Scholastic), and *Dazzle Draw* (Broderbund) for graphics, *The Newsroom* (Springboard or Scholastic Edition) and *Print Magic* (Epyx) for newsletters and book reports, and *Magic Slate* (Sunburst) for word processing activities.

Regardless of which packages you use, invest some time in "playing around" with the software. After you have figured out how to use a program, teach a couple of children in your class how to use it — then let them teach the others. This saves lots of time. You may find that some children get the hang of new programs much faster than you can!

• ***Try a print project first.*** One project we implemented to get both students and teachers comfortable with the computer was book publishing. In the traditional classroom, getting a good book report or creative writing from a child is like pulling hens' teeth. That problem disappears when your students use a computer, printer, and a word processing program to publish their own books. The child can hand write his or her report or story and then type it out on the computer. (We used *Magic Slate*, whose 20-column typeface size is perfect for book publishing.) The first printout is for editing purposes — it is amazing how many spelling and grammatical errors children can find on their own. Once the child has edited the errors out, a new printout can be made, divided into "pages," and cut apart. The cut pieces are pasted onto pages of a "blank book," which has been made with sheets of 8-1/2" x 11" typing paper folded and sewn down the middle. Illustrations can be drawn in, cut from magazines and pasted in, or created with a computer program such as *Dazzle Draw*. (The computer illustration idea caught on like wildfire with third grade book publishers at Hewitt Elementary, who then began teaching some kindergarten children how to use *Dazzle Draw* so they could illustrate their own books.) The inside of the book is then glued on two pieces of wallpaper- or Contact paper-covered cardboard, and *voila!* — a hardbound print media library is born.

• ***Lights, camera, action!*** Once you're comfortable with the computer, you can turn to the other aspects of multi-media, such as keyboards, video cameras, and VCRs. A video camera can hold a powerful attraction for children. They will do about anything to be on camera and to operate this adult "toy." The amazing thing is that children can operate the camera and the VCR with ease — which is why we refer to this equipment as "little high-tech."

The by-now familiar software and computer also play an important role in video production, allowing students to create titles and special effects, as well as to edit the tape for sequence. Pictures created on *Dazzle Draw*, for



example, can be the backdrop for puppet plays recorded on video tape. Animation, using a program called *Fantavision,* can be recorded directly from computer to video tape by means of a simple patch cord connecting the monitor output of the computer to the video input of the VCR. For sound and background music for the production, kids can use portable electronic keyboards, and edit the music on the computer.

CREATE A MULTI-MEDIA MAP

Trial and error is the watchword for multi-media — for both the teacher and the student. Since 1986, we at Hewitt have made many mistakes and learned much about working with multi-media equipment. From these long, rewarding hours of work have come some specific guidelines which make multi-media more manageable.

• ***Decide on a central purpose for your multi-media activity.*** The first step in any project should be to decide on what you want to accomplish with this activity. Will this production be a means of introducing a new concept? Will it be used as a teaching tool for other students? Will it be a vehicle for your students to show their understanding and knowledge of a completed unit of study?

Many core curriculum subjects have become exciting to learn about when a "movie script" is written and produced by the students. Some topics tackled by the students at Hewitt Elementary have included letter-writing, telling time, prefixes, community history, American Indian life, environmental sounds, and weather.

One project undertaken in our early trials was intended as the culminating activity for a unit of study about the Pilgrims. The teacher chose this activity as a means for her students to express what they had learned from their study of our first immigrants. She hoped that a multi-media production would take the place of an ordinary paper and pen unit test.

• ***Identify your target audience.*** Who will see your finished project: parents, peers, students at a lower or higher level, other teachers and administrators? Decide on what type or combination of audience you intend to share this project with.

In the example above, having decided to focus on the Pilgrims, the students and teacher involved determined that the resulting project should be made so that it would be appropriate for others who had recently studied this same subject. It was also decided that the finished product should be shared with the producers' parents.

• ***Decide which media you will use.*** Multi-media projects range from simple print and word processing activities to an audio project (such as a radio show) and from a skit or puppet show to a fully produced "movie." The type of project you choose should be one which would best fit your purpose and expected audience and one which your students will be able to carry out.

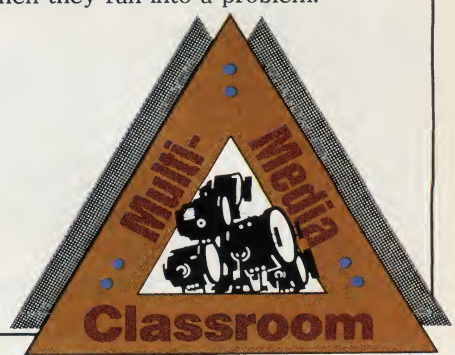
After much deliberation it was decided that the Pilgrim project would best fit a puppet show format. Students would work on creating their own script from what they considered the most interesting and important facts about the Pilgrims and their experiences. They would plan and produce all the props and scenery for the play. They would create appropriate sound effects. Also, it was decided, this play should be recorded and shown on videotape. This would allow the students to edit and correct any problems they had before sharing it with their intended audiences.

• ***Gather needed materials and equipment.*** This is where the most frustration comes into your project. The old adage "beg, borrow, and steal" becomes very true at this point. Survey what is available in your school (or from your home!). You may even have students or parents who can loan some of the needed software to your class for the duration of your project. Take time to become familiar with any equipment or software programs you think will be useful. Allow your students time to explore on their own.

For the Pilgrim puppet play a list was made of all needed materials: a computer, word processing program (*Magic Slate*), paper and paint for puppets and scenery, keyboard, and a video camera. Most of the equipment was found at school. Arrangements were made so the equipment would be available when it was needed.

• ***Develop a timeline.*** Students should not be boxed into tightly scheduled time frames if you want them to be their most creative. However, it is really helpful at this point to form some type of overall scheduling plan. Once you start a project, it is very easy to get carried away with the many possibilities and you may find your students way over their heads in being able to complete the project within the allotted time. You can help students choose assignments for individual or group work at this time, also.

Our "Multi-Media Pilgrims" worked closely with the teacher in deciding what should be done when and by whom. One of the surprising aspects to this approach was the high level of cooperation among the students. Group decisions were made relatively painlessly. Enthusiasm was high. Knowing that their classmates were depending on them seemed to help students to try to complete their portion of the work on time. Students even began to ask each other for help when they ran into a problem.



• ***Allow plenty of time for editing.*** There will be much to do during the final editing stage. Be prepared for minor setbacks. Don't let this discourage you, however. Problem-solving skills for both you and your students are bound to grow dramatically during this stage of the process. Look for the challenge!

• ***Jump in and have fun!*** When all else fails, go for it! If you are having feelings of insecurity, ask the students to help you get going. They will certainly be ready for this exciting new approach to learning. You will be amazed at the creativity and ingenuity of your students. Enjoy this opportunity to watch as your students uncover their own individual talents.

The teacher of our Pilgrim program producers was very hesitant to start actual work on this project. Once plans and lists had been made and equipment had been gathered, she agonized over how to get the students to carry out what she had envisioned. Within a day, however, one student brought in a script for the play which he had written the night before. Working from his rough draft, the students quickly revised the script with very little interference from the teacher. The next day another student brought in objects he thought would be useful for scenery. Another student drew designs for possible puppet characters. Still another student had discovered sounds on a keyboard which could be used for sound effects in the play. The lesson for this teacher and for others is that students will take over and get the work done, given the challenge.

Nancy Rentschler "troubleshoots" student videotaping and computer work.

• ***Share your completed project.*** Once your project has been edited and is in its final form, take the time to let your students share it. The pride that shows in the student producers' faces is fantastic. Not only have your students gained new interest in learning, you will find that you have had a rebirth of enthusiasm for teaching.

The Pilgrim play was finally finished. There are no words which could adequately express the feeling of accomplishment these little guys experienced through this project. The teacher noticed several things that had happened during the process. Self-assurance of each of these students grew greatly. Students seemed to feel more comfortable discussing their ideas with the teacher. Group cooperation improved tremendously. In fact, this group of students formed a support group during this time which has lasted throughout the last two years. It is not a closed club, however. As other students come in, they are quickly invited to join in the group, as the "old gang" shares its knowledge and expertise of multi-media. This particular group of students was made up of second grade hearing-impaired students ranging in hearing loss from moderate to profound. Surely, if they could accomplish so much with multi-media, other students can benefit as well.

FUTURE HORIZONS

Multi-media maniacs at Hewitt Elementary are very interested in how they might combine the multi-media concept with the growing field of telecommunications. Our students have been communicating via modem with students at Greenglade Elementary in Vancouver, British Columbia for the past year. So far, we have exchanged student stories and general information about our differing communities. We hope to develop this area of multi-media greatly during the next school year. Our school

Multi-Media Tools
Equipment Alternatives

"SCAVENGER'S SPECIAL"
(All equipment borrowed)

Audio
School Califone record player
School tape player
Students' personal Walkmen, boom boxes, keyboards

Video
School video camera
School TV
School VCR

Computer
School computer

Software
School word processing program
School graphics or Logo program

HEWITT ELEMENTARY'S CURRENT INVENTORY
(Equipment donated or purchased through fundraising)

Audio
Casio SK-1 Sampler Keyboard ($99.95 value)
Yamaha DX100 MIDI Keyboard ($445)
Assorted headphones, cables, and a jam box (approx. $100)

Video
Radio Shack color monitor ($299.95)
Sharp 19" color TV ($229)
RCA TVs borrowed from the library
JVC GR-C7U Video Camcorder ($1,299.95)
Two Sony 8mm cameras with editing VCRs ($899.95 each)
Personal cameras brought when needed

Computer
Apple IIe's with mouse card, mouse, 2 drives, color monitor ($1,254 each)
Apple IIc's, IIGS (donated)
Apple IIe modem and cables ($300.30)
Apple IIe ImageWriter II printers ($468.50 each)
Digital Vision *ComputerEyes/2* video digitizer and *Enhanced* software ($154.90)

Software
Animate(Broderbund)($69.96)
Certificate Maker (Springboard) ($39.95)
Dazzle Draw (Broderbund) ($59.95)
Fantavision (Broderbund) ($49.95/$59.95 IIGS version)
Graphics Expander (Springboard) ($39.95)
Magic Slate (Sunburst) ($89)
The Newsroom family (Springboard or Scholastic version) ($59.95, plus $29.95-$39.95 for additional *Clip Art Collections)*
The Print Shop family (Broderbund) ($49.95/$59.95 IIGS version, plus $19.95 each for additional *Graphics Libraries*)
Print Magic (EPYX) ($59.95)
PrintMaster Plus (Unison World) ($39.95)
SuperPrint(Scholastic)($59.95)

system has also developed an on-line bulletin board through which we can communicate with other teachers and students in our system. We are constantly looking for other ways to expand our use of telecommunications.

Where do we go from here? Multimedia is a new and expanding field. Possibilities seem almost limitless. We're generating new ideas and projects constantly. One such project that Hewitt Elementary and Cahaba Heights Community School (also a Jefferson County school) are about to embark upon is using the Apple Macintosh series to further enhance our school curriculum. After getting an exciting firsthand look at what our kids were doing with computers and

(continued)

"...the kind of open-ended educational software that is ideal for kindergarten and primary age children... It gives them the chance to experiment,...it sparks their own creativity."

MAGIC CRAYON
InfoWorld, Oct. 1983

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in the
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(continued)
multi-media, Apple Computer decided to "seed" the schools with a Macintosh II computer, a CD-ROM drive, and an overhead projection panel to create a desktop video presentation system. We are all very grateful, excited and ready to explore the new horizons offered to us.

The ultimate goal for multi-media, as for any method of teaching, is to prepare students for their future. In this Age of Communication, we hope to help students develop their ability to actively analyze and utilize the information that comes their way through a multitude of media — and, in the process, to become empowered contributors to society.

Nancy Rentschler is a speech and language pathologist at Hewitt Elementary School; ***Lynn Murphy*** is Hewitt's teacher of the hearing impaired. Both are self-described "multi-media maniacs."

Spreading The Multi-Media Message

When Fred D'Ignazio was hired in 1986 by the Jefferson County, Alabama, Board of Education to lead teacher workshops on multi-media, he was already seasoned as a writer and television commentator on high-tech subjects. His work with *Compute!* magazine and on public television's "The New Tech Times" and "Educational Computing" had given him a first-hand look at the computer as a communications link in a variety of media, and he was eager to help teachers and students claim such multi-media tools as their own. The result, he believed, would be a renewed interest in learning on the part of students — and a new way to combat "teacher burnout."

After Fred's 1986 workshops in the Birmingham area, the Multi-Media Schools Project really got underway. Fred organized a telecommunications exchange between the Alabama schools and their counterparts in British Columbia, and helped all of the schools with fundraising and proposal-writing to local and national corporations to support their media productions. Most recently, Fred has contracted with Apple Computer to bring the multi-media message to several Apple Classroom of Tomorrow (ACOT) sites around the country.

For more information about multi-media workshops and materials, contact Fred D'Ignazio, Multi-Media Classrooms, Inc.,1302 Beach St., East Lansing, MI 48823, 517/337-1549.

'Tiny tech' offers new learning modalities for students and teachers

By Fred D'Ignazio, Director
Teacher Explorer Center

My favorite *Calvin and Hobbes* strip is one that I pulled off the calendar in our kitchen at home. The strip shows Calvin as Spaceman Spiff, blasting around the galaxy, discovering a new dimension where time has no meaning. In most of the strip, Spiff is in control. He is heroic. He is making life or death decisions. However, in the last panel, Calvin is no longer the spectacular Spiff. He is just a kid sitting at his desk at school. "Off camera" we hear his teacher saying, "Now we carry the one into the tens column..."

When I was young I was a "Spaceman Spiff." Now I am the father of an eleven-year-old Spaceman Spiff. In fact, we are raising a whole generation of Spaceman Spiffs. Their egos and imaginations are fed a steady fantasy diet of MTV, one-second video and sound bites, Ninja Turtles, Wrestlemania, Stephen King, Nintendo, high-powered commercials, jazzed-up movies with computer-synthesized special effects and digital, high-fidelity surround sound.

It's a sea of electronic media out there. And our kids are submerged in the sea, with their eyes, ears, minds, hearts and imaginations wide open, swimming through the media, devouring the media, seeing themselves reflected in the media.

And then the school bell rings.

Our children scramble into school and leave the outside world behind. They close the classroom door and the turbulent sea of images, rotating text, voices, music and sounds disappears. The tide recedes. The sea dries up. And in its place is a tiny trickle of numbers and words — a *spoken* stream flowing from the mouth of the teacher and a *printed* stream slowly scanned on a page in a textbook.

How do kids react to being yanked from the sea, hauled from their habitat, beached like a whale on an arid shore?

Who you gonna call? Spaceman Spiff!

'Tiny tech' to the rescue

Clearly we have a problem here. Teachers have important things to teach their students — language skills, computational skills, science, history, culture, civilization. We can't have our students tripping out just when we serve up a carefully crafted meal selected from each of the basic educational food groups.

Fortunately, help is near. In the past ten years something new has come into the world — *tiny tech* — a blizzard of tiny, portable computers, video cameras, VCRs, cellular phones, fax machines, musical keyboards, walkmen and other miniature gadgets. We have mistaken most of these devices for toys, but they are really not toys at all. Instead they are multimedia pencils — harbingers of a new era in human history, an era of interactive, multi-sensory, restructured knowledge.

In past eras what were the carriers of knowledge? The human mind, the mouth, spoken language, written language. In the world of the past the power tools of knowledge were the pencil and pen.

Now new pencils and pens are emerging. Video cameras, for example, are visual and auditory pens, capable of capturing real-world images and sounds from a child's own world — the real stuff of life as kids live it.

Fred D'Ignazio, Director of Michigan's 1st Teacher Explorer Center

(Reprinted with permission from **Michigan Technology Quarterly**, Summer 1990)

New camcorders like Sony's TR5 weigh only a few ounces and fit into a kindergartner's hand. Camcorders will soon be small enough, simple enough, portable enough, cheap enough to become children's personal thinking tools and the carriers of what children feel, think and observe about the world around them.

Post-desktop fusion

There is something else out there, too. It's more than a sea of media. It's a process of rapid, accelerating confluence and convergence. All those tiny devices — the cameras, TVs, faxes, etc. — are coming together and fusing. They are becoming something beyond computers, beyond TV, beyond telephones, beyond copying machines and other familiar appliances that have become the mundane fixtures of the adult workplace.

We are witnessing *post-desktop fusion*. It is "fusion" because computers, cameras and other knowledge appliances are transforming themselves, combining functions and growing smaller and smaller. The process is so quick that we can almost see with the naked eye. It is "post-desktop" because we are swiftly moving beyond the desktop as a metaphor and as a hub for capturing, processing and communicating knowledge.

We used to talk about "desktop computing" to reflect the fact that computers were small enough to fit on everyone's desktop. But computers have continued to shrink to post-desktop sizes — from transportable to portable, from portable to laptop, from laptop to notebook. Now we have pocket computers. And talking *wrist-top computers* with built-in speech-recognition and cellular fax modems are not far away.

Dick Tracy, here we come!

The term "desktop computing" is also troublesome from the *computing* point of view. In a world in which microchips have burrowed their way into every appliance to make it "intelligent" and "programmable," where is the real computer? It may be the *video computer* that we use to capture images and sounds and that we call a "camcorder." Perhaps it is the "smart TV" or "programmable telephone" or the battery-powered, portable fax copier.

One thing is certain, computers are not just boxes resting on desktops. Instead they are more like caterpillars busily transforming into butterflies of startling shapes and sizes. And herein lies our opportunity for restructuring knowledge — to expand knowledge beyond a narrow stream of text and talk to a rich flood of multimedia knowledge that feeds the senses, stirs the imagination and pierces the heart. Learners are not just little, linear *text computers*. They are human beings with bodies, senses and sensitivities that yearn to be tapped. It is time that we feed and nurture human beings as whole persons and let them communicate in a multitude of modalities.

Teachers work together in cooperative — learning groups to create multi-media presentations.

Multimedia pencils — spaceage kids

Where are the fresh metaphors to inspire us and help us understand a world of interactive, multi-sensory, restructured knowledge?

Is the textbook an appropriate metaphor? The black board? The desktop?

Be honest. How appealing is the desktop for the average human being — adult or child? Do little images of trash cans and file folders really turn you on? Do they capture the power of creating interactive presentations that begin to have the "look and feel" of the real world?

Do they reflect the way "knowledge" will be captured, constructed and transformed in the workplace of the future? The "desktop" is appropriate if your pen is made of wood and lead and you need a flat, horizontal writing surface to become an author.

It is less appropriate if you can become an author with a little mobile *fusion pencil* that includes a stylus and a screen on which to write, that runs on batteries, that has a built-in video camera (or jack), a microphone, a cellular faxmodem and stereo speakers.

You can hang your "pencil" from your shoulder or pop it into your knapsack. You can take it to conduct multimedia interviews with senior citizens who actually lived through the Great Depression or the First World War, or scientists at a local college or business, or city officials who are struggling with where to locate a new prison, how to dispose of solid waste, or how to preserve the

➤

habitat of an endangered animal.

You can "write" using your fusion pencil while you are at a friend's home, or on the playground, on a bus, at the kitchen table, or under a tree. In a world of fusion pencils the desktop is ***the world*** and your job as a young multimedia author is to go out and capture bits and pieces of that world to share, describe and make understandable to those around you.

Using a fusion pencil, all those Spaceman Spiffs out there can put "pen to paper" and create dazzling, animated graphics, moving images and high-fidelity sounds. They can create miniature models of the real world that come to life through the shrewd use of sounds, images and words that engage the imagination.

They can become authors in media they now only consume.

Teachers who recognize the power of these new multimedia pencils are smart. Their students can explore restructured knowledge and do multimedia publishing — in the classroom and on a shoestring.

For example, a savvy teacher can build a scavenged publishing center for her students out of the flotsam and jetsam of scuffed-up devices that kick around every school (the record players, tape players, VCRs, TVs, computers and cameras). A teacher can be on the cutting edge by repurposing low-cost equipment she already has and by combining it into a multimedia publishing center that simulates fusion pencils of the future.

These centers tap young people's vast, latent, hidden skills in an emerging world of restructured knowledge. Children have acquired enormous navigational "literacy" skills from a lifetime of swimming through a sea of electronic multimedia. Children already know how to "read" this media. Now let's teach them how to "write" it.

And not stop there.

What is knowledge?

If a teacher is going to help her students restructure knowledge she first must ask herself what is knowledge? If knowledge is *text* then students can use word processors, animation programs, CD-ROM and online data bases to capture knowledge, organize it and create publications.

If knowledge is *images*, then students can capture, explore, manage and manipulate knowledge with video cameras, laserdiscs, computer graphics, etc. If knowledge is *sounds* then students can capture sounds with microphones, digitize sounds into the computer and explore sounds on a tape player, a walkman or record player.

If knowledge is people's *spoken words*, then students can tape their words and the stirring words of famous individuals such as Thomas Edison, Martin Luther King, Jr. and Helen Keller.

If we redefine "knowledge" as being something more than spoken and written text, we move to a new definition of knowledge — not a post-Gutenberg definition but a *Gutenberg Plus* definition of knowledge. The Gutenberg Plus definition retains the high regard for written and spoken language, for language as a tool of thought, communication and imagination.

But it also values young people's significant skills in visual literacy, auditory literacy, in manipulating complex visual, textual, auditory and three-dimensional models (computer games) and young people's experimental attitude toward mastering and troubleshooting complex multimedia equipment.

A smart teacher should value these skills and assign responsibilities to students to help guide them and harness their skills to produce restructured knowledge *demonstrations* and *knowledge experiments* that would be too rich and too multi-faceted for the teacher to attempt on her own.

A smart teacher can work with students to create multimedia databases and interactive presentations.

A smart teacher should not feel inadequate if students' technical skills far exceed her own. She should not feel intimated if students' work surpasses her work. But she should avoid multimedia ***productions*** like the plague.

"Production" is a word from the past — from the era of Hollywood, Madison Avenue and Broadway. It is a term describing **one-way media** that is produced by producers and consumed by everyone else. A production is linear, often passive and incapable of being altered, annotated or repurposed by the user. A production makes me the producer and everyone else the audience. Productions themselves can be pits. They are costly, time-consuming and require special expertise.

Productions are not practical for daily classroom learning. They are also not appropriate for the coming era of personal, interactive, restructured knowledge.

What is appropriate? How about knowledge experiments, "how-to" demonstrations, rapid prototypes, instant publishing and throwaway multimedia databases. Students' multimedia research and publishing must be cheap, quick, dirty and out the door to meet students' and teachers' needs. It must be conversational — students and teachers must feel free to invent, experiment, draft, test and reshape the media on the fly.

Classroom publishing centers should not be little TV studios and publishing houses. These are models of the old media. Instead they should be messy innovation labs, inquiry centers and impromptu spaceships that take students and teachers on low-budget, half-hour *electronic field trips* to explore knowledge spatially and contextually — just as it exists in the real world.

Classrooms of tomorrow

A classroom in the future will have the look and feel of

the real world. With the addition of low-cost telecommunication devices (fax modems, two-way cable TV, etc.) students in physical classrooms will be able to collaborate and form virtual classrooms that span cities, states and countries. Students will be able to participate in virtual "share-a-student," "junior-year abroad," and "foreign-exchange" programs electronically rather than physically. Teachers will help students reach out to scientists, policymakers, business leaders, writers and artists and invite them into the classroom as virtual guests, virtual teachers and virtual "writers in residence" for a day, a week or a semester.

In the classroom of the future students will be able to assemble multimedia databases on their computers that have a startling, lifelike quality. The databases will have fragments of the real world — its sounds, its voices, its music, its images, its spoken and written languages — its exceedingly rich profoundly important *texture*. The proof of the success of the databases will be how well they mimic and recreate reality and, equally, how well they help student authors and their classmates explain, describe and understand the real world.

When they are successful, multimedia databases can become something more than "databases." Perhaps we need a new term to describe them. Perhaps "knowledge bases," "meaning bases," or "reality bases" is more apt.

Or how about *virtual reality*?

In the classroom of the future, students will move away from memorization of facts and become authors skilled at crafting *models of the real world*. These little virtual-reality databases will have the look and feel of the real world, but they will be computer-based simulations that can be paused, replayed and analyzed from a dozen different perspectives — including mathematical, spatial, historical, geographical, contextual, etc.

You might call them multimedia *story problems* in which students focus on the dilemmas of real people — moms, dads, scientists, explorers and quarry foremen — as they confront life and try to make timely decisions despite too little information, too little time and a chaos of competing distractions and alternatives.

These story problems can become the interactive presentations that students create for their classmates and challenge their classmates to solve with the aid of the multimedia databases for research, experimentation, "what-if" speculation and "just-in-time training."

(The Michigan Department of Education has awarded a grant to East Lansing Public Schools to set up a model "classroom of tomorrow" that demonstrates the ideas above. The name of the classroom is the Teacher Explorer Center.

The center will host demonstrations and free, full-day workshops for teachers, policymakers and community leaders through September.

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MEBS

MULTIMEDIA DETECTIVES

BY FRED D'IGNASIO

Michigan elementary school kids learn research and publishing skills through the magic of the Net.

Fourth- and fifth-grade students and teachers at Murphy Elementary in Haslett, Mich., are not in the classroom today. They are tiptoeing around in rubber boots in a bog near the school. Their aim: to investigate the fragile wetlands that abound in Meridian Township but that are increasingly at risk because of the rapid commercial development in their area.

The students are laden with notebooks, pens, pencils, a tape recorder, video recorder, and pocket camera. They are "multimedia detectives," part of an ongoing program in Okemos, Haslett, and East Lansing schools.

The program, now almost two years old, enables teachers in the three school districts to explore ways in which multimedia and telecommunications technology can help their students learn how to engage in publishing.

For the last two years I've been working on the Multimedia Detectives project as a consultant, author, and instructor on behalf of my company, Multi-Media Classrooms Inc. Among our project's many program sponsors is the Michigan Information Technology Network (MITN), and we use its computer server to maintain our own Web page at **http://www.mitn.msu.edu/mmd/mmd.htm**.

The teachers in our project and their fourth- and fifth-grade "detectives" plan to develop the home page into an online multimedia gallery featuring students' science research on local wetlands in Meridian Township. Teachers also would like their students' Web pages to feature links to wetlands resources pulled from remote libraries, laboratories, and other research locations around the globe.

To help the students become more competent as Web explorers, we use two-way cable TV as a control and viewing mechanism. The cable connection was supplied by TCI Cable of Michigan. TCI has set up two-way links in elementary school classrooms in each of the three participating school districts, and a fourth two-way link has been set up in Multi-Media Classrooms' interactive TV studio in Okemos.

TCI Cable and Michigan State University have installed a high-speed ChannelWorks cable modem at the Multi-Media Classrooms site. The modem, made by Digital Equipment Corp., is the size of a small VCR. The ChannelWorks box is attached to an IBM PC via an internal LANtastic Ethernet card and a standard Ethernet cable. A second connection on the back of the box is attached to normal coaxial cable just like

As part of the Multimedia Detectives project, Michigan fourth and fifth graders explored a local bog to gather research for their Web page about wetlands.

Photographs by Donna Terek

Jeffrey Omura and Marisa Novella with their teacher, Cindy Lafkas, explore a fragile ecosystem (bottom). Jessica Maynard and Jeffrey Omura take careful notes (right).

the kind on the back of a TV or VCR.

Thanks to an online gateway provided by MSU, our project's PC is now on a high-speed network that allows us to send and receive data over the Internet. The most remarkable benefit of this setup is speed. We can transmit and receive data at the full Ethernet speed of 10 Mbps—1,000 times the speed of a normal dial-up phone line. The high-speed link makes it possible for our fourth- and fifth-grade detectives to be full-fledged multimedia Web researchers using a Web browser.

How are students able to see the Web screens on the computer? After all, the ChannelWorks box and its PC are tucked away in a back room at Multi-Media Classrooms, far away from the students' schools.

The key is cable TV. Students are able to see the Web research pages on their classroom TVs. This is accomplished via the two-way cable linkup that beams the Web screens appearing on the computer at Multi-Media Classrooms simultaneously into the classrooms in the three districts. The computer is able to "publish" these screens over television using a MediaLogic box that translates the computer's RGB video to normal TV (NTSC) video, which is then broadcast over the cable line.

The students may be able to see the Web pages on their classroom TV, but how are they able to control the remote computer located in the Multi-Media Classrooms studio?

Because the cable line is two-way for audio as well as video, the students are able to guide the computer operator at Multi-Media Classrooms just by talking. Each of the two-way cable sites has a standard video camera mounted on a tripod, with a small home-video microphone leading from the camera over a 10-to-20-foot extension cord. To change the direction of exploration on the Web, students talk into their camera microphone and their voices come out loud and clear in the Multi-Media Classrooms studio.

As a powerful metaphor to help students visualize this highly abstract process, we have been using the popular *Magic Schoolbus* books written by Joanna Cole and published by Scholastic. We liken our cable/Web connection to the Magic Schoolbus, which enables a classroom full of students to explore the world of science firsthand by traveling anywhere in space and time almost instantaneously.

Our Magic Schoolbus is our PC, which has been souped up with the addition of the high-speed ChannelWorks box and fiber-optics connection provided by MSU and TCI. The magic highway, which can take us around the globe or even into outer space is, of course, the World Wide Web.

In the *Magic Schoolbus* books, the bus is driven by the students' teacher, the zany Ms. Frizzle. In our project I get to be the "bus driver," and I drive our bus by clicking the mouse buttons on hypertext links that whisk us around the world on the Web. And like Ms. Frizzle in the books, I take requests from the students and drive the bus to research sites to help the students find answers to their science questions.

In a way, the Magic Schoolbus is offering an affordable opportunity to explore the near future. We have heard how we will soon have video servers that will be controlled from homes and institutions on the Internet. But thanks to the Multi-Media Detectives partners, fourth and fifth graders in our three districts are already controlling a shared, low-cost video server to do collaborative, real-time research at high speed on the Internet.

In the future, multimedia will be delivered over new information appliances that combine today's computer, telephone, and TV. The way most people will access information will be via a

miniature keyboard, or "zapper." Information will be delivered via composite documents composed of text, sound, images, music, and video clips.

The Web offers a good preview of the type of "documents" with which we will interact in the future. Using Web browsers we will be able to search online libraries and access real-time information all around the globe.

How can today's students learn to be authors of these online documents and not just browsers and researchers? Students could learn HTML, but there are few simple guides available to the average student or teacher.

Students in our Multimedia Detectives project are learning to author multimedia documents using inexpensive authoring programs now widely available for classroom use.

The programs include Apple's Scrapbook, Roger Wagner Publishing Inc.'s Hyper Studio, Pierian Spring Software's Digital Chisel, Digital Workshop's Illuminatus, and Davidson's Multimedia Workshop.

All of these authoring programs let students practice authoring skills they will need to create complex multimedia documents on the Web. At a minimum, the programs include a word processor, paint program, sound editor, method for importing, buttons that control other multimedia devices including audio CDs and laserdiscs, and hyperlink buttons.

We are instilling in our students an appreciation of the art and technology of network communications.

Students can create rough drafts of their online reports, essays, and interactive databases in any of the authoring programs. The tools give them experience integrating many different multimedia data types into a single coherent document.

Students also learn how to compose hypermedia documents that contain references to remote documents and media elements that can be retrieved in real time by a simple point-and-click.

The students transfer the documents to floppy diskettes, which are turned over to the Web experts at MITN. The MITN programmers translate the students' documents into HTML documents and place them on the Web server, where they can then be accessed globally by any person with a browser.

In the near future, we plan to teach students how to convert their own documents into files ready for immediate Internet publishing.

By giving students early experience in authoring and publishing multimedia documents on the Web, we are instilling in them an appreciation of the art and technology of network communication and preparing them for the future. ■

Fred D'Ignazio (dignazio@msen.com) is a Lansing, Mich.-based author and magazine columnist who writes about education and technology.

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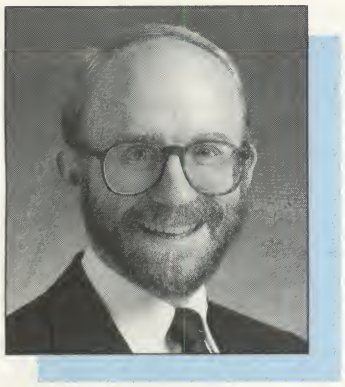
CIRCLE NUMBER 93

Professional Classroom

Integrating the Work Environment of the 1990s into Today's Classroom

Fred D'Ignazio



Fred D'Ignazio, a pioneer in multimedia education, is president of Multi-Media Classrooms, Inc., Okemos, MI 48864. As former director of the Teacher Explorer Center, a teacher training center for the East Lansing Public Schools, he created the multimedia classroom that served as a Model Classroom of the Future for the state of Michigan. The center also served as a "buddy" for a similar program in the Detroit Public School District.

To fit the workplace of the 21st century, American industry hopes to recruit a new kind of worker, one who is eminently trainable. These workers will not need to know everything up front—nor will they be expected to. Instead, they will come with skills that make them good learners. Those skills will include:

- strong grounding in basic skills, including oral and written communication skills, plus practical math, estimation, and computational skills
- ability to cope with new technologies and the use of technology as a tool to achieve organizational goals
- ability to take responsibility for learning
- ability to promote learning on the part of peers and colleagues
- ability to work cooperatively in a high-performance team environment
- ability to deal with fluid, evolving, and ambiguous situations in which problems must be solved given little time and using incomplete information and experience

Workers of this caliber will not just magically pop out of nowhere. They will only emerge from classrooms in which they have spent years practicing and refining the necessary skills.

Teachers as Leaders

What this situation means for teachers is that we have entered an era in which their roles must change significantly. Not something under anyone's control, these forces for change are impersonal, pervasive, and societywide.

But although change is inevitable, all teachers should be given the opportunity to control the direction and pace of change in their own classrooms and careers. Furthermore, all teachers should have the opportunity to become leaders—visionaries, scouts, champions—for change that improves the quality of their working environment, makes them more successful in teaching their students, and elevates their status in the eyes of their community and the educational establishment.

Multimedia Offers Opportunity

Fortunately, technology itself is offering teachers this opportunity by redefining the curriculum they are required to teach. In this decade, curricular "knowledge" will be transformed as the publishing, broadcasting, and communications industries

converge toward a common digital standard. Knowledge "carriers" that were once quite separate—radio, TV, motion pictures, telecommunications, magazines, newspapers, data processing, and the performing arts—will converge and overlap. Out of this transformation will emerge new hybrid representations of curricular knowledge—through multimedia publishing, multimedia data processing, and so on.

At the same time, new multimedia-oriented products will become available to individuals as new tools for personal communication. The scope of desktop publishing is already expanding to include "documents" that combine photographic images, human voices, music, sound effects, full-motion video, and computer graphics, as well as words and numbers.

Teachers who embrace this technology early have a unique opportunity to become pioneers in a remarkable new learning environment in which *students can reconstruct knowledge in a multimedia format.* Thus, today's "talk and text" classroom environment will evolve into an exciting, studio-like arena in which student producers create curricular videos, electronic slide shows, video book reports, infographics, multimedia term papers, and a multitude of other materials. Difficult, dry areas of the curriculum will come alive as students translate them into vivid multimedia presentations.

Do-It-Yourself Platform

Educators who see the possibilities for student-produced multimedia learning don't have to wait for some far-off future. They can begin now. They can bring the multimedia publishing environment of the 21st century into today's classroom. With a little bit of creativity, educators can assemble a multimedia learning center from individual components scavenged from equipment already found at most schools.

Teachers are ingenious improvisers and scavengers and they can use these skills to work with their students and track down everything they need. Such equipment may include a personal computer, a VCR, a TV, a video camera, an audio tape recorder, a videodisc player, a record player, and an electronic keyboard. Put together correctly, this equipment can provide a multimedia platform capable of publishing video biographies, multimedia science projects, electronic field trips, and many other innovative and exciting presentations.

Sharing Responsibility

None of these changes can succeed, however, unless teachers share some of the responsibilities for teaching and learning with their students. A multimedia learning environment facilitates this approach because all involved learn from one another.

In this new environment, the teacher acts as a process and knowledge specialist. Students, especially at early ages, are particularly handy around new technologies and at figuring out ingenious ways to explore critical subjects in the curriculum using those technologies. Working together within this new learning environment, teachers and students become teams of "knowledge explorers," who together translate textbook knowledge into new, exciting multimedia presentations.

If education is going to succeed at preparing students for the workplace of the 1990s and beyond, its administrators and teachers must create an environment resembling that workplace—and technology is only one ingredient. Opportunities comprise the rest of the equation—opportunities for students to take responsibility for their own learning and to become producers of their own knowledge. Students must spend time working in collaborative teams and must be put into situations where they can explore, muck around, and think critically and cooperatively in order to solve problems and accomplish tasks.

Such a classroom models the work environment of the future, and in it teachers have a dual role—as leaders of and as collaborators with their students.

TBS

This article is adapted from a piece originally printed in the ***T.H.E. Journal,*** *September 1990, by permission of that publication.*

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For additional information, contact the author at Multi-Media Classrooms, Inc., 4121 Okemos Rd., Suite 24, Okemos, MI 48864, 517/349-1340, Fax: 517/349-3657.

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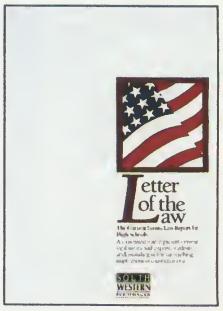

LETTER OF THE LAW

This fascinating quarterly newsletter deals primarily with issues that have come before the Supreme Court—so it's never outdated. It also covers other important topics such as terrorism, extradition proceedings, and insider trader violations. Each issue provides up to two hours of material for classes involving current events. For more information call Dan Baum at 1-416-322-3728.

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CONTINUED FROM PAGE 28

ware for students and teachers alike all present formidable challenges in themselves. But the most critical element in successful integration is the final synthesis of change throughout all these areas. Projects that offer examples of meaningful and lasting change are those which have received support with which to address all of these factors in an integrated fashion.

CHALLENGES REMAIN

Designing with computers and software technology has created many notable achievements. Nevertheless, there remain significant challenges to be overcome in order for design-based education and educational technology to reach their full potential for supporting continuous improvement in schools, colleges, universities, and industry training programs. Fred D'Ignazio, a highly regarded leader-explorer in educational multimedia, offers a suggestion to ensure that project success leads to system improvement. "Students and teachers should develop projects with the purpose of presenting them to the school board, to parent groups, and during events like open house. Through the power of example, they can abolish a lot of stereotypes that exist now about multimedia and computer graphics tools—such as that they are only for vocational training, or that they are too complicated for kids to use, or that they aren't relevant to the classroom. By having done it, the kids challenge all those stereotypes."

Economist John Kenneth Galbraith once said, "Faced with the choice between changing one's mind and proving that there is no need to do so, almost everybody gets busy on the proof." Galbraith's observation may describe the attitudes of holdouts who still resist the tremendous value of technology tools in education. However, the exercise in denial described by the famed economist is becoming increasingly difficult. Witness virtual reality spaces modeled by 10th-graders, LEGO brick constructions or box cities created by 10-year-olds with CAD software—not to mention the breathtaking buildings and breakthrough prototypes of industrial products designed by today's university students. All these offer dynamic proof both of the benefits of incorporating technology in design and learning and of the fact that the design of fundamental change is upon us. It's clear that both change and design are here to stay.

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TEACHERS & TECHNOLOGY

START YOUR HIGH-TECH TREK WITH THESE SIMPLE STEPS

According to a recent National Education Association report surveying 1,200 teachers, only half of those who had access to a computer for instructional purposes used it. Fewer than one quarter avail themselves of technology such as CD-ROM and interactive media. If you have access to these and other technologies, are you using them? If not, why not? If fear of technology is the problem, this month's expert has the solution: Don't take a giant leap into the technological revolution—just start with a few little baby steps.

"I have trained over 8,000 teachers in the last two years, and almost all of them have a self-image problem when it comes to technology," says Fred D'Ignazio, president of Multi-Media Classrooms Inc. (Okemos, MI) and former director of the Teacher Explorer Center for the state of Michigan. "They consider themselves technology wimps because they know so little about technology and imagine that they should know everything." For this reason, they have tended to take on almost nothing related to technology. The task has just seemed too enormous.

D'Ignazio has a solution: "I recommend that teachers take 'baby steps' toward technology." You can make the most of the technology available to you and your students by following these steps.

TELEVISION

The first "baby step" is television. "Offices and homes are plugged into the electronic network that television offers," D'Ignazio explains. "However, most classrooms are still very isolated." In most cases, this is not the fault or choice of the teachers, D'Ignazio stresses.

Television is the least expensive and easiest way to plug your classroom into the electronic network. It is simply a matter of mounting a television in a corner (or on a cart) and getting a cable connection to the classroom. If budgeting problems prevent this, you may be able to arrange to have your class meet in a room where a television is already hooked up.

Once this is accomplished, you can get copies of program guides for the various networks. Among the most popular for classroom teaching are *CNN* (especially its "Newsroom" program), *Discovery, C-Span,* and *Arts & Entertainment.*

"As you're developing your lesson plans, you can refer to the program guides and find ways to integrate certain programs into your teaching," D'Ignazio continues. "Television becomes an audiovisual aid to instruction."

VIDEOCASSETTE RECORDERS

"Video is a very simple and easy step up from television," says D'Ignazio. "If the times of the shows that you want your students to see do not coincide with your classes, then you or your school's media specialist can tape the specific shows that you want to use as part of your lesson plans and show them when you want to show them," D'Ignazio explains.

Taping offers another advantage: You can tape complete shows, but then only show certain short segments that specifically pertain to your lessons.

TECHNOLOGY AIDES

The third baby step is to enlist the assistance of some of your technology-proficient students. Teachers have asked students to operate movie projectors, filmstrip machines, and slide projectors in the classroom for decades. Having them manage higher technology equipment is simply a small step up from this.

"Students have learned a variety of technology skills," says D'Ignazio. "They hook up all types of electronic equipment at home on their own—televisions, VCRs,

Continued on page 8

IDEAS THAT WORK

TEACH BASIC SKILLS THROUGH PRACTICAL EXPERIENCES

Are you and your students tired of the same old classroom drills for learning basic skills? Try this simple community field trip idea from Alice Braun, ESE specialist at Wingate Oaks School (Ft. Lauderdale, FL). You can adapt this idea for students of all ages and ability levels.

Braun took a primary class on a trip to the local supermarket, Students were given a specific amount of money to spend on foods that could be brought back to school and prepared. The trip was the basis for lessons on...

- Food groups and nutrition: *What constitutes a balanced meal?*
- Comparison shopping for the best value.
- Handling money and making change.
- Weights and measures.
- Basic math: *Potatoes are 39 cents a pound and we need 3 pounds. How much will they cost?*
- Geography: *The potatoes we bought were grown in Idaho. Let's find Idaho on a map, find out what it's like there, and see what else the state produces.*
- Careers: *What type of jobs are connected to supermarkets?*
- Cooking: *What are the different ways to cook the potatoes? How many pieces do we have if we cut them in quarters? in eighths? Which way do the potatoes taste best? Which way are they most nutritious?*

The students relate to and learn from their field trip experiences readily—and with much more enthusiasm than if these lessons only came out of a textbook.

HIGH TECH TREK

Continued from page 7

audio equipment, computers, games, and so on. They can easily become your 'technology trouble-shooters.'"

D'Ignazio recommends appointing two or three students in class to be your technology aides. These students don't have to be the brightest ones academically, he points out. But they should enjoy trying to figure things out, as well as be polite, courteous, helpful, and hard working.

"Explain to the students you select that you appreciate their assistance," he continues. "However, also emphasize that their work for you needs to be done in addition to their regular class assignments. If they begin to fall behind in their academic activities, you will need to replace them with students who keep up with their work.

"Students love this kind of opportunity," he emphasizes. "It is a real boost for their self-esteem."

Prerecorded Videotapes

Now you're ready to visit your local video store or your school's media center and begin selecting some prerecorded videotapes that will fit into your lesson plans—documentaries, nature specials, how-to tapes, and so on.

Turn these tapes over to your student technology aides. Then give them specific instructions. Example: "We're going to be studying U.S. history from 1840 to 1860 next week. Here are five videotapes that contain information on that period. Find some appropriate clips in each of the videos that we can use in class next Thursday. Use your watch to time the clips. All of them should take a total of 15 minutes or less."

In D'Ignazio's experience, students love the responsibility. "It gives them the opportunity to become studio production assistants, just like on ABC-TV or CNN," he notes.

In addition, you will probably be intrigued if you watch them perform their tasks. "They do everything in fast-forward," he explains. "Students rarely watch anything in the 'play' mode. They will fast-forward through a tape until they get to the sections they want. They have gained the ability to process oral and visual information quickly because of the shows and television commercials they watch."

Laser Disc

The next step is to become familiar with laser disc technology. "There are a lot of curriculum titles being released on laser disc, including electronic textbooks," says D'Ignazio.

You can operate a laser disc player by itself using buttons on the front of the player or with a handheld remote. "You press a button, and instantly you can call up any one of 54,000 video images on a single laser disc," he says.

Using electronic textbooks involves using a handheld bar code scanner to scan the bar code in the margin of the textbook. Using the scanner, you can call up a specific frame or clip on the laser disc, and it plays on the television screen. It does not even require a computer.

Video Networking

It's just one more small step to video networking. Your local cable company can install a video network of regular coaxial cable (the standard cable to which your home television set is hooked up in order to receive cable programs) throughout your school.

Now programs can be piped into every classroom from outside as well as from a "bank" of VCRs that are housed in your school's media center. "In this way, you can call up videos on demand," explains D'Ignazio.

All that the teacher sees in the classroom is a keypad on the wall, which is hooked up to the network. You simply press in the number of the program you want on the keypad and the program begins.

Program Creation

Program creation takes the video networking concept a step further, allowing students to create their own programs and broadcast them to other rooms in the school. The only additional equipment required will be a video camera and a tripod. "The tripod can be telescoped down as low as you want, so even kindergartners can create their own programs," D'Ignazio notes.

If you have a speaker visit your class, for example, you can have your technology aides set up the video camera, tape the presentation live, and have it broadcast simultaneously to other classes in the school.

An additional possibility: "Students who can't yet read or write can create their own documentaries," says D'Ignazio. "In one school, students created instructional videos for kindergartners on how the lunchroom works. They also created one titled 'What is a Principal?' that included interviews with students on what they thought a principal was."

Computers and CD-ROM

The next (and possibly final) baby step is computer technology, which opens up many possibilities. "For example, you can arrange to have a computer control your laser disc player," explains D'Ignazio. "In addition, there are digital movies available that appear on a computer screen and can be projected to an overhead projector. Many encyclopedias also come in this format." A single CD (known as CD-ROM) can hold an entire encyclopedia, including text, photos, maps, and short digital movies and sound clips of famous people's voices.

As you can see, you don't have to become a technological wizard to take advantage of the latest technological advances for your classroom. Just start with one small baby step...

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A Conversation With Fred D'Ignazio, President, Multimedia Classrooms, Inc.:

How To Put Multimedia To Work In Your Classroom For $258

Priced at $258 for education*, LinkWay Live! is an exciting IBM multimedia authoring tool based on the award-winning LinkWay 2.01. Even easier to use than LinkWay 2.01, LinkWay Live! requires no scripting for the creation of powerful multimedia applications and presentations. What's more, LinkWay Live! will run on most 286-based DOS computers.

IBM talked recently to Fred D'Ignazio, president of Okemos, Michigan-based Multimedia Classrooms, Inc., a consulting firm. Backed by his years of experience working with LinkWay in education, D'Ignazio offered key insights into how LinkWay Live! can be integrated into education — and particularly into elementary classrooms, which tend to be more flexible in their approach. We excerpt from the interview:

ZAP! Instant multimedia...

LinkWay Live! has all of the features that teachers have been asking for in an authoring program. The program makes it absolutely simple to interact with multimedia content and control electronic media. While it has a lot of underlying power for complex multimedia applications, many teachers will love it simply because it brings multimedia presentations down to the level of the "TV remote control."

We're trying to get teachers to move to a new, cooperative style where they share teaching responsibilities with their students.

Teachers can quickly call up a media window on the LinkWay Live! computer screen. Then they can take any media device — like an audio CD or a laserdisc — and just play the clips they want to present to the class. No fumbling around. With little or no training — "zap!" — teachers can quickly illustrate a lesson they are doing in class.

Teachers can even involve their students in the preparation and delivery of their multimedia clips. Just as a teacher might ask a student to wheel in a filmstrip projector or a VCR, teachers work with kids in setting up their clips and can even have a kid handle the mouse and click the buttons as they move through the lesson. We're trying to get teachers to move to a new, cooperative style where they share teaching responsibilities with their students. LinkWay Live! provides a great incentive for teacher/student

cooperation in teaching and learning in the classroom.

Getting students started

LinkWay Live! should be viewed as the means to an end, a facilitator — rather than just another subject that teachers or students have to master. Teachers need to structure their classrooms to allow learning time so that the students can become conversant in LinkWay Live!

It's often best to arrange this learning at the beginning of the year, because then kids can use LinkWay Live! throughout the year, no matter what subject they're studying. LinkWay Live! can "wake up" almost any subject — get the attention of kids and motivate them to learn more about a subject. It's a story starter, whether LinkWay Live! is used by the teacher to introduce a lesson or by a team of students making a class presentation. In the latter case, the team of students may have worked a week or two in advance to create the presentation for the whole class.

Of course, LinkWay Live! also lends itself to the creation of great final projects. It provides an excellent way for students to demonstrate what they've learned in a lesson or in special research. In this way, LinkWay Live! makes an excellent tool for creating electronic student portfolios. Students can publish and store their portfolios on disk or on a network, and they can transfer them onto videotape or "publish" them electronically by phone and modem to students in remote classrooms.

One of the best resources I have found as a trainer is the LinkWay Live! online tutorial. It's a fantastic introduction to hypermedia and how to use LinkWay Live! — including the terminology, how to create multimedia "buttons" and how to create multimedia "folders." The teacher doesn't even have to supervise; he/she just turns a team of kids loose on the tutorial.

LinkWay Live! also lends itself to the creation of great final projects. It provides an excellent way for students to demonstrate what they've learned in a lesson or in special research.

Another terrific resource is the LinkWay Live! tutorial "comic book," which is included with the program. Between the tutorial and the comic book, it's amazing — teachers have to do no advance work at all. They don't even have to know LinkWay Live! themselves.

I recommend a three-part progression. Let the kids read the comic book, then let them work on the tutorial, and then give them two or three periods for just "mucking around" with LinkWay Live! Don't give them an assignment initially. Let them just play.

Some kids will gravitate to LinkWay Live!'s paint program, others to LinkWay Live!'s word processor and still others to the hypermedia features. The kids will naturally embrace the environments that fit their learning style. And in a good cooperative environment, where you are trying to encourage kids with different learning styles to work together in a team, the kids will then introduce each other to the multiple facets of LinkWay Live! — they'll teach each other about all of LinkWay Live!'s separate features.

The pencil of the future

When the kids are up to speed on LinkWay Live!, you then "link" LinkWay Live! to more traditional subjects — say history. Now the kids are equipped with a great tool for personal expression, and they can use this tool in all of their regular learning. They can have more fun with history, because suddenly they've got a way to get inside history and present it in a way that interests them.

LinkWay Live! is the "pencil of the future." And it's a totally generalized pencil. A pencil doesn't have to write about history, and it doesn't even have to do English. It's a very multipurpose tool. But it has to be in every kid's hands. And they have to be given the freedom to experiment.

Kids will get even more out of LinkWay Live! if they can use it as a front end for a laserdisc player. Schools these days really can't do without at least one laserdisc player — but that laserdisc player can be shared among several classes. Schools can put the laserdisc player on a cart with a VCR and a TV. That cart can be wheeled into the classroom when needed and hooked up to the serial port in the back of the computer.

When LinkWay Live! is combined with a laserdisc player, teachers can start teaching kids critical viewing and listening skills. Kids can search the laserdisc and

New Options For Windows Users

SuperLink, a new version of LinkWay Live! for Windows, has recently been released by Washington Computer Services, developers of the original LinkWay Live!

"If you are still a DOS user, then you should stick with the original DOS-based LinkWay Live! and LinkWay 2.0," says Fred D'Ignazio, president of Multimedia Classrooms, Inc. "However, if you do most of your computing in Windows, you should try out SuperLink."

A companion product, Multimedia Scrapbook, has also been released by Washington Computer Services. Multimedia Scrapbook is intended for casual users of multimedia and is, by far, the quickest and easiest-to-use LinkWay program to date, according to D'Ignazio. Like SuperLink, Multimedia Scrapbook is available only in a Windows (3.1) environment and requires you to have a 386 (or higher) computer with at least 4 MB of memory.

If you are interested in testing SuperLink or Multimedia Scrapbook, you can send $30 to Washington Computer Services for a 3.5-inch demonstration diskette, or you can write them for a catalog flyer on each product: Washington Computer Services, 2601 North Shore Rd., Bellingham, WA 98226, 206-734-8248.

For more information, or to reach the individuals mentioned in this article, call the IBM Multimedia Consulting Center at 1 800-426-9402, and reference ext. 44P.

choose material to include in "instant" multimedia presentations that they create with LinkWay Live! Suddenly, you've gone from kids "mucking around" with LinkWay Live! to real classroom presentations.

The content of the laserdisc could be almost anything. The idea is simply to get kids excited by learning, excited by sharing their learning with others. They'll begin to use critical thinking in creating their presentations. And as they get into a particular subject, they'll supplement the multimedia materials with book research — using the textbook or the library. And they can pull all this material together in their LinkWay Live! presentation.

The first step is to get the kids comfortable with LinkWay Live! Then you turn them loose on a particular subject, you wheel in the TV and the laserdisc player, and the kids become little multimedia stars. It's unbelievably easy for them.

Because many schools have a scarcity of laserdisc players, it's often most efficient to work in small teams that one by one have access to a player. The first team will give a presentation to the class, then do a mini tutorial for the class on how they produced their presentation. After the presentation, the first team actively coaches a new team to do the next presentation. I call it a "student in-service" or "peer in-service" — it's a great example of cooperative teaching and learning. The team can even coach the teacher!

Teachers learning from students

The kids in a sense become the in-classroom trainers. They are like consultants or instructors of technology, and as such they learn all the rules that are promoted in cooperative learning, such as respect for others, nurturing, peer training, respect for different learning styles and so forth. Everyone in the class is encouraged to make a contribution, and everyone is judged on cooperative mastery of the material, as well as individual mastery of the material.

Teachers can learn the technology from the kids. At quiet parts of the day, when the kids are busy on projects, the teacher can work with a student or two and pick up some simple skills — like how to work with a laserdisc.

Teachers have a huge appetite to learn. But in a traditional classroom, the teacher is judged as the master. The whole American style of teaching is mastery teaching. "I am the master of learning, I know all the pedagogical techniques, I know the content" — this kind of

mystique can be very self-defeating. It's not technology that holds teachers back, nor is it lack of interest. To make multimedia work in the classroom, teachers can't feel like they're on a pedestal.

A better approach for teachers is to let the kids have a role as technology tutors. A great way to make that happen is through "multimedia clubs" that meet after school hours. The more technically-savvy teachers become the coaches of the club. The kids come in and they do fun things — and then later, as they get better, they start actually doing homework projects and creating presentations they can make to other kids in their class.

But these clubs aren't just for kids. Regular teachers can be invited to the club. For teachers and students alike, it's an in-school computer camp. Teachers get low-cost in-servicing — and the technology gurus in the room may be only 3- or 4-feet high!

LinkWay Live! facilitates cooperative learning — students working together as teams, working together collaboratively as authors. It's a practical tool that also becomes a facilitator to help teachers begin implementing new curriculum objectives in the classroom.

These multimedia clubs provide teachers with a much more relaxed environment in which to learn. There's no fixed class period constraining them. In a regular class, teachers tend to feel the seconds ticking by — they always feel that pressure inside their heads. But if you can pull teachers "off the clock" — and club meetings after school seem to do this — then all of a sudden their learning ability shoots right up. Their fears and inhibitions drop, and they can just *have fun* and be normal human beings.

Toward a process curriculum

Education today is undergoing a transformation from a content-centered curriculum to a process curriculum. I've traveled around the country and listened to hundreds of teachers. Previously, teachers have been totally concerned about content-oriented curriculum objectives. Now, all of a sudden there's a huge pressure to start coming up with new process curriculum objectives. Critical thinking, whole language learning, cooperative learning... those are the new curriculum objectives, and they're starting to become built into state law.

LinkWay Live! facilitates cooperative learning — students working together as teams, working together collaboratively as authors. It's a practical tool that also becomes a facilitator to help teachers begin implementing new curriculum objectives in the classroom. As one teacher describes it, making a LinkWay Live! presentation is "teamwork or it won't work."

**Suggested educational pricing for LinkWay Live! is $258 for a single-user version; $1,550 for the network version (fewer than 14 users); and $1,810 for fewer than 50 users. For LinkWay 2.01, the single-user suggested educational price is $134; $1,135 for LinkWay 2.01 on a network. For the latest pricing on LinkWay Live!, you may call the EduQuest software support number at 1 800-426-4338.*

For more information, or to reach the individuals mentioned in this article, call the IBM Multimedia Consulting Center at 1 800-426-9402, and reference ext. 440.

CEMA CONFERENCE WORKSHOP SUMMARIES

"MULTIMEDIA DETECTIVES"
Fred D'Ignazio

Those of us who attended the Pre-conference were educated and entertained by the incredible shenanigans of Fred D'Ignazio. Bouncing around his setting of cables and boxes and doohickeys of all shapes and sizes, the multimedia guru treated us to the sights and sounds of the future of education.

Fred D'Ignazio

The message came across clearly that students should be **creating** media, not simply absorbing it passively. Grouped into "Nintendo SWAT Teams," children of all ages can manipulate technology for the purpose of accelerating learning. They can work cooperatively with one another and collaboratively with their teachers, ultimately restructuring the classroom and the educational process as a whole.

But the session was not just about the abstract classroom of the future. Practical, concrete ideas were demonstrated as well. For example, Fred recommended setting up various mini-centers for use by the student teams, including graphic, audio, and video workstations. At each site, all of the necessary tools can be made available for the production of a single medium — starting with basic paper and markers. The K.I.S.S. principle (Keep it Simple to be Successful) allows students to master one medium at a time, and gradually learn to combine them in appropriate ways.

The focus of this learning is centered around the R-A-P Strategy: Research, Author, Publish. Technology plays a key role at each step. The Research, or inputting, phase involves capturing and gathering text, audio, video, and graphics from a myriad of electronic sources, including directly via the keyboard, microphone and/or paint programs. The Authoring, or processing, phase requires the use of a good multimedia program (such as HyperStudio, LinkWay, HyperCard, or Clarisimpact) to cut and paste the product of the Research phase, creating a multimedia document. The Publish, or output, phase allows the presentation of this document, in the form of an electronic portfolio, videotape, cable broadcast, or even a new pit-stop on the information superhighway.

From there, students can navigate into the technological future. Multimedia can provide the tools for successful learning, if we provide the groundwork of basic skills. Fred D'Ignazio was inspiring and energizing, and most importantly he showed us that anyone and everyone can "do" multimedia — even his own mom!

— Judy Savage

"KIDS TO KIDS INTERNATIONAL: A Global Literacy Program of Student-created Picture Books"
Pat Kibbe

One of the most enlightening workshops I have attended in a long time was Pat Kibbe's presentation. I had agreed to introduce our guest speaker but was a little concerned that the audience would be sparse because of the time. Her program was scheduled for 3:45 p.m. which sometimes can be hard to fill.

I had one of the most heartwarming experiences of my life. Pat Kibbe has created a program called Kids to Kids International, which has to be one of the most caring and productive projects ever conceived.

The premise is very basic. You provide something to children who are in need by children who have the ability to give. In this case we are talking about books. Aside from food, clothing and shelter, what could be more basic than that?

Quite by accident, Pat discovered that children in a refugee camp in Cambodia had no books. After a visit there, she realized the need was greater than she first thought. The end result has been Kids To Kids International. Now homemade books from children all over the United States are sent to needy children all over the world.

Featured Article

Beyond Multimedia: Four Practical Paradigms for the Appropriate Use of Affordable Technologies

Beyond Multimedia

Paradigm One: Upside-Down TV

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What Is Multimedia?

"Multimedia" means the digital (read "computer") transformation and synchronization of multiple media, including voice, music, sound effects, printed text, still images, video, and animation. Multimedia is the marriage of computers and television. It is the fusion of information and communication. Its effect will be chiefly economic as whole industries collide and converge, producing a single electronic mega-information industry of the future.

But "multimedia" can be a misleading buzzword.

We should be skeptical of the term "multimedia" and think of it as a rough approximation, a way of taking a blurry snapshot of a swiftly moving locomotive. The subject is not the snapshot, nor is it the locomotive. Rather it is the process of change itself as we rush from a static print-based representation of knowledge to fluid, electronic representations of knowledge.

We should think of learning in the future as a "sensory collage" designed to reach us on all our learning modalities. Are we a kinesthetic learner? A visual learner? A linguistic learner? No matter which way we learn, multimedia will reach us as "windows of learning" — i.e., in the form of sounds, images, charts, maps, narrative descriptions, movies, vignettes, snapshots, sketches, etc., constantly refreshed with new electronic data generated from original sources at home and around the globe, then piped into our homes, offices, media centers, and classrooms along electronic highways.

The marvel is that these new windows of learning will be opened to us on a commonplace desktop computer. Simply by clicking a mouse, talking into a computer microphone, or touching a screen, we will open windows that offer us unparalleled opportunities to engage our students as active participants in classroom learning.

Beyond Multimedia

The key is to focus our sights beyond multimedia. Let's try to think beyond multimedia to simple steps we can take to begin using information in new formats in today's classrooms with today's students.

Forget Multimedia.

Think MONO-media.

The very term "multimedia" sounds intimidating. Somehow we are led to believe that in order to be "Multimedia Correct" we need to present information using ALL media simultaneously — not just text but sound, graphics, animation, and movies, too! We are told that classrooms of the future will resemble Hollywood studios equipped with video cameras, switchboards, mixers, CD players, computers, TV's, laserdisc players, digitizers, microphones, fiber optics, and hundreds of cables, buttons, and blinking lights.

This is silly. Multimedia doesn't mean the simultaneous application of all media in all situations. This is BLIND media, a kind of "nuking" our kids with media. Rather we should think about the APPROPRIATE use of media in the classroom, since this is what it is really all about. One day soon we

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will be able to choose the appropriate media to convey any subject in our curriculum. It will be simple, easy, and cheap to call up sounds, images, movies, text, etc. Then it's up to us to decide WHICH medium is appropriate to help meet our learning objectives. Maybe it means a single medium. Or maybe two or three media used judiciously and harmoniously to support each other.

Media to Think With

Why should we use media at all? Because media can become a tool for the active construction of knowledge.

The key is to slow things down. Any time we "blitz" students with too much sensory input and don't allow time for reflection, discussion, analysis, and digestion of information, we are using media inappropriately and turning the classroom into a training ground for brain-numb couch potatoes.

How can we slow things down? We can do this by managing media judiciously. We can train our students to use media in small, meaningful bites, rather than as a smorgasbord of "all you can eat."

In the classroom this translates into using one medium at a time. For example, we can wheel in a videodisc player and let students deliver oral narrations of their writing while they display images or play short musical or spoken clips to illustrate their work.

Or we can use a CD-ROM encyclopedia to project charts, maps, or photographs to illuminate concepts that seem abstract when expressed only as words.

Or we can use a video camera to record concrete events, people, places, and effects, in order to make learning less remote, fuzzy, and unreal.

The key is to use media in SHORT SPURTS then switch immediately to periods of classroom discussion, writing, critique, etc. We want to use media to stimulate thinking not overwhelm it. You can accomplish this by presenting a few sound bites or video bites, then reserving plenty of time for students to think about what they have seen and heard. They need time to write down their thoughts. They need time to discuss their interpretations, their observations and conclusions. Give them time to modify and rework their thinking into a personally meaningful pattern.

KISS:
Keep It Simple to be Successful

Remember, before you get panicky about managing a multimedia classroom of the future, scale things down. Keep it simple. Dole your media out sparingly. Provide lots of thinking time, writing time, and discussion time. Remember: A little media goes a long way.

In summary, multimedia is mostly what we make it. It will soon be so easy, so cheap, and so quick to use media of any sort that we will be able to pick and choose among any combination of media that we like. It is up to us to transform MULTI-media into "appropriate media" and "common sense media."

[In the next issue we'll look at how to use media as "Lego Blocks" for language and math construction, authoring, and investigation in our article, "Beyond Multimedia: The Student as Sherlock Holmes."]◆

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Featured Article

Beyond Multimedia: Four Practical Paradigms for the Appropriate Use of Affordable Technologies

Beyond Multimedia

Paradigm Two: The Student as Sherlock Holmes

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PARADIGMS LOST: The Search for a George Jetson Future

Our schools are gearing up in a noble quest for "the holy Grail" of technology: a perfect system that will deliver instruction, work smoothly with little need for training or maintenance, and not require replacing at least for five to ten years. NOT!

Unfortunately, most schools are creating technology plans, passing bonds, getting grants, and implementing technology based on an unworkable paradigm — a George Jetson paradigm dating from the 1930s in which we see technology as a gleaming white appliance that saves us labor and promises us convenience, reliability, stability, and push-button ease of operation.

Technology as "teaching machine."

Technology as instructional delivery system.

Perfect. Reliable. Simple.

Think about it. You are probably right now installing a new computer network, training teachers how to use a laserdisc player, setting up a CD-ROM drive on the computer in your library media center, negotiating with the local cable-TV company to wire your classrooms with educational cable channels, etc.

Right? And what do you think will be the end result of all your labors?

Are you hoping that "one golden day" your work will be done? Are you hoping that all these systems will be installed? That the wires and cables will all be laid? The plugs all plugged in? The machines all turned on? Software installed? The machines all up and working — as faithful servants of energetic and happy teachers and students?

Are you hoping to be thanked for your efforts? Maybe even "canonized" as a local technological saint? The hero of grateful students, teachers, parents, administrators, and school board officials?

Uh-oh. You had better think again. You are a victim of the "George Jetson Syndrome." You see your technology infrastructure as some vast, interrelated system (read: "appliance") that can somehow be plugged in, turned on, and made operational, stable, and unchanging — just like some kind of educational refrigerator, vacuum cleaner, or toaster oven.

Unfortunately, technology has undergone a fundamental change — from an "automating" phenomenon (a labor-saving and labor-replacing device) to an "informating" phenomenon. Technology at the local and global levels is no longer our guardian angel. It is our demon! Technology contributes more to the changes, the complexity, and the turmoil of everyday life far more than it is responsible for making our lives easier.

And it is only going to get worse.

In the next five years (even before the 21st century!) all forms of information, communication, and media technologies will converge, collide, fuse and combine

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Featured Article

Beyond Multimedia: Four Practical Paradigms for the Appropriate Use of Affordable Technologies

Beyond Multimedia

Paradigm Three: The Active Media Center

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Spigots of Multimedia Learning

This article is part of a four-part series that began two issues ago. The first two articles focused on practical strategies for classroom teachers. Unfortunately, as we all know, teachers are known for doing all kinds of innovative things in their classroom that somehow never spread beyond the classroom walls. A few "high fliers" in every building always manage to scavenge resources (money, supplies, "Moms," the principal's blessing, etc.) and do wonderful things. Other teachers typically feel a combination of admiration, wonder, and, sadly, resentment. And the world of the school building, after feeling a bump or a ripple, pretty much remains the same.

What is needed is a schoolwide strategy for change. If multimedia is all that it's made out to be in the popular press, at educational conferences, in vendors' ads and presentations, and in the first two articles in this series, then it ought to be a tool for promoting schoolwide change — improvement, growth, restructuring, etc.

Many school administrators recognize the power of multimedia technologies. Unfortunately, they still see technology in its old "George Jetson" role as "automation." In order to "automate" the classroom, administrators convince district voters to pass multimillion-dollar bonds to install new "hard technology architectures" in district classrooms — fiber optic cabling, TVs in every classroom, video, voice, and data networks, classroom computers, publishing centers, language labs, etc.

According to this way of thinking, the goal is to transform the entire school building into a "learning appliance." Instructional delivery systems are installed to deliver the curriculum through various spigots installed in every classroom. The teacher then becomes the instructional-spigot operator. Her training consists of learning how to operate the spigot to spray videos, sounds, computer data, etc. into the classroom. The teacher's key professional responsibility is to decide when it is appropriate to turn the spigot on, how long the spigot can spurt "learning" into the room, and when it should be shut off.

In this mechanical metaphor, the library media center becomes the "switchboard" for receiving the new knowledge and curriculum materials, and the library media specialist becomes a "super" spigot operator (a spigot "czar") who opens the main pipes to the various classrooms and decides what media materials to squirt into each classroom.

Say Good-Bye to George Jetson

Unfortunately, this metaphor for learning and use of technology flies in the face of new research into teaching practices, on how children learn, organizational management, and the impact of new technologies. School systems who spend millions of dollars to "retrofit" their buildings into educational appliances are setting themselves up for dramatic and expensive failure.

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As we discussed in the earlier articles, technology is NOT a "solution." This is a myth perpetuated by vendors who must reach a bottom-line based on gross sales of boxes, cables, and software programs. The myth finds ready acceptance among school administrators who believe in the mythology of solutions in the form of appliances. Administrators are fiscal and political managers who must use the accountant's spreadsheet to run their buildings and districts and stay fiscally solvent. They love a "solution" that costs a certain number of dollars, can be "installed" in so many months, and will "deliver" a precise list of outcomes that can be readily correlated with current educational goals and reporting obligations.

Unfortunately, this is a trap. Knowledge technologies are changing too rapidly to ever resemble an appliance like a refrigerator, vacuum cleaner, or toaster oven. As soon as a million-dollar "solution" is installed it will no longer be "cutting edge." Newer solutions will be available at cheaper prices promising outcomes and results far beyond the expensive system that is now in place.

And even if you ignore the outside world and the fact that you are already slipping behind, the system you've just installed, the one that promises to be a "one-button" solution to instructional delivery, bears a frightening resemblance to glazed-eye, couch potato television (at thousands of times the price) right out of the 1950s heydey of George Jetson.

The reason for this confusion over the appropriate use of technology is that we educators have been chasing the wrong "Holy Grail." Instructional delivery systems keep getting more and more comprehensive and provide a fascinating array of push-button sounds, images, facts, and information with the simple press of a button. However, despite their attractive bells and whistles, they are inimical to the deeper change process that schools must undergo to upgrade themselves to 21st-century standards.

Is "Nuking the Kids" the Answer?

The problem is embedded in the "nuke-'em-with-technology" model itself. As more research on learning, teaching, and good schools appears, we are discovering that "instruction" and "learning" cannot simply be "delivered." But try to tell that to school administrators and vendors promising "turn-key" solutions to all of schools' educational woes.

According to the "paradigm" for technology prevalent in schools today, in the school of the future kids will simply arrive, take off their coats and hats, and "plug" themselves into a buildingwide learning appliance.

And they will love it!

Teachers can kiss their disciplinary problems good-bye. Boredom will be a thing of the past. Kids will be mesmerized when you put them in front of theaterlike multimedia computer display screens. They will sit for hours in the darkness watching cable-TV, laserdisc, and videotape programs produced by public TV, Discovery, and National Geographic. And they will interact with computer-based learning games forever. To get them to stop "learning," you will have to turn off the classroom lights and threaten them that you are going to close the school building and lock them in.

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This is no surprise. We know our kids love TV. We know kids like to work at computers. We've known this for the last ten years.

But is this the true classroom of the future? Is this preparing kids for an age of "disposable workers" and "throwaway workers?" Does it match the latest research we have in active learning and new teaching practices? Will it give our children the essentials to hold down a job or be a responsible citizen in the 21st century? Does it even vaguely compare to the transformation of the workplace in which fewer workers are required to engage in "high-performance teams" to solve problems in less time, with less money, and use computers actively as budget-crunching, problem-solving tools?

Is "Nuking the Kids" the answer? And what role is it assigning to teachers? It's fine to move beyond the current model of the teacher as "Sage on the Stage" to "Guide from the Side." Unfortunately, instructional delivery systems will soon be so multisensory, so entertaining, and so engaging that the guide from the side may eventually become the "Boor Out the Door!"

We all know that teachers need to grow into new roles. But there is no need to make these roles "deskilled" and "dehumanized" roles. Teachers should not be replaced by machines at the center of the learning process. The moment of learning should still be human centered. It should still be part of collaboration, conversation, and competition among humans.

But how can this be accomplished?

The Active Media Center

Schools need to move beyond the deceptive simplicity of the instructional-delivery model. Finding ways to introduce more and more media into the classroom with push-button ease is ultimately more harmful than good. Instead, schools should look to ways to put teachers and students at the steering wheel to manage the "appropriate" use of media for active learning. Media can cost a lot and look high-tech but it might still produce passive students and passive, devalued, and resentful teachers.

This does not need to happen. A little common-sense thinking up front can help steer your school along a better, brighter path.

Classrooms in the future, in order to model the outside world, need to become media "construction" centers rather than media "consumption" centers. If learning is viewed as a full-time obligation for teachers and students alike, and if learning is seen as the active construction of meaning by any human being, then we need to look at media not as "knowledge" or "curriculum" but as RAW MATERIALS to help learners construct their own meaning in rich and diverse ways.

How can we get this kind of process started?

Informating vs Automating

Astute observers of the workplace such as Shoshonna Zuboff of the Harvard Business School have observed that corporations that are going through the throes of restructuring are learning how to "informate" rather than "automate" their workplace. Automating, according to Zuboff, is just the transfer to machines, of current tasks and procedures. The result is to speed up the current process (with

fewer people and at a lower cost) but not to change that process in any fundamental way.

For most companies, just in order to survive, this is not enough. Most companies are now tranforming the entire way they do business. They are remaking their companies from the ground up, and in the process, they are changing the jobs of everyone in the organization from the lowest worker to the company president.

"Informating" a workplace results in dramatic fundamental change in the way companies see their product, their customers, and themselves. Informating a workplace means to use computer and communication technologies to enable ALL workers to become intimately familiar with how the company works — in real-time! — and to play a vital collaborative role in improving the quality of every operation in that company. Informating happens when a company goes from a "paper time" world of days and weeks lagging after a job arrives to moving to "real-time" operations with "just-in-time" solutions to complex problems the moment they arrive.

Schools are preparing our country's citizens and workers of the future. In order to be a legitimate provider of the preparation and training they need to be aware of the world outside the classroom door, schools need to move beyond "automating" to "informating." Learning, teaching, and construction of meaning can not be "automated." They must be "informated." Teachers and students must learn to see themselves as knowledge workers who use the best tools available to construct meaning out of their emerging world. Construction of meaning must occur constantly and actively in "real time" not in a "paper time" world that existed in textbooks or work sheets a decade or even a year ago. Students who learn the world as it is represented in a paper-time past will emerge with a knowledge base that is hopefully outdated. Students who are taught older methods of knowledge acquisition and assimilation will find themselves lacking valuable job skills when they emerge from the artificial "paper time" world of the typical classroom.

If we are to "informate" our classrooms rather than "automate" them, we must look at all media — books, worksheets, magazines, television, videodiscs, CD-ROM, etc. as "active media" — i.e., as raw materials for the collaborative and individual construction of knowledge. Such a strategy can not be accomplished in one or two classrooms while the rest of a school building is going about business in the normal way. Such a strategy must begin as a buildingwide initiative. And it can start in the school's library media center.

A Launchpad for School Change

Educators who are interested in using technology to promote serious school change should focus first on the library media center. The library media center is "ground zero" for a new school of the future that sparks teachers and children to engage in the constant, furious construction of knowledge.

But in order for the library media center to be an agent for change it must adopt the new paradigm of "active media." Viewing the library through the old metaphor of a "treasure" or "collection" of media will not prepare the media specialist for his or her new role. Neither is it healthy to look at the library media center as some kind of mechanical "switchboard" for routing, regulating, and controlling the media pipelines that fan out to a building's classrooms. The whole "plumbing" metaphor is suspect because it supports the current misconception of technology as a delivery system to pipe learning into learners' heads. The result of this use of the media

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center will be to encourage teachers and students alike to become more passive and more willing consumers of ever glitzier, ever more seductive push-button media. Instructional "fast-food" media centers are just around the corner. For a couple bucks per student you will soon be able to order a digital deli delight delivered to your classroom door. And once you and your students acquire a taste for multimedia pizza and pop, it will be hard to go back.

Authors not Eaters

Media in a school of the future should not be something you "consume," it should be something you author. The gigantic influx of new knowledge that is ready to flood into the schools along the new national data "superhighways" should be chunked, diced, and sliced by students into raw materials for their own construction projects — their own multimedia book reports, research projects, digital movies, scientific experiments, simulations, multimedia prototypes, and springboards for classroom debate, analysis, and discussion.

In a nutshell, raw multimedia should not be piped indiscriminately into a classroom. Instead, it should first be "attacked" by swat teams and construction crews of student authors who dissect it, digest it, and create their own representations of knowledge that they offer to their classmates and parents as "breakfast for your head." This real-time construction of meaning out of diverse raw materials and fragments bombarding the school from the outside world is PRECISELY what students will need to master to succeed in the outside world. So it is just the thing to get started doing in our schools.

The Library as Media Construction Center

The library media center must rethink its role. Gone are the days when a student can come into the library armed only with a pen or pencil and a stack of three-by-five index cards. In such a library the student is inadequately prepared in five critical dimensions:

1. The Library Must Equip Students to Do Multimedia Research.

Index cards and pencils can only be used to capture text-based knowledge. They are woefully inadequate as research tools to research and capture the emergent representations of knowledge in the form of images, sounds, movies, animations, and rich, human voices. For example, a student doing a report on Martin Luther King, Jr. needs to leave the library of the future with selections of Dr. King's dramatic speeches — actual recorded sounds! She needs to leave with moving images of Dr. King's passionate orations and emotional pleas for a peaceful transformation to a new kind of equitable society. She needs to leave with maps, diagrams, charts, that trace the path of Dr. King's life and the violent turmoil of the times in which he lived.

What tools can she use to capture these rich multimedia sources?

They are digitizers, scanners, cameras, and recorders, microphones, headphones, graphics tablets, VCRs, musical keyboards, and paint programs.

Whatever they are, whatever they will be, the student researcher should learn how to use these tools in the library. And the library should be the place where she gains her first experience putting these tools to work.

2. Libraries *Should Become Sites for* Instant "Real-Time" Authoring and Not Just Places for Browsing, Reading, and Research.

We are on the edge of a new world of knowledge. Today's print-based text (letters, numbers) will be replaced by a "SUPERTEXT" of the future that includes images, sounds, diagrams, music, voices, and movies. Students shouldn't go to the library of the future merely to browse through this supertext and perhaps capture examples of it. Instead, they need to learn how to become instant, real-time authors of supertext. They need to become supertext AUTHORS and not just readers.

Libraries should think seriously about fusing their facilities with school computer labs. Library media specialists and computer coordinators should rethink the way they use their computers — their "multimedia research stations" and "multimedia authoring stations" as part of a schoolwide initiative to promote student multimedia authoring and exploration.

One can imagine a room that houses a library's print collection next door to a "research and publishing" room that houses the library's multimedia workstations. Students could come and go freely between the two rooms gathering materials equally from electronic online sources (Internet, computer data services, Cable TV, CD-ROM, videodiscs, etc.) and from the print-based sources in the library.

The object of the students' work would be to work together as collaborative authoring teams to merge and meld information they dig up IN ALL FORMATS into their own original narratives. What is more, these narratives should first be word-based. They should be created with the new generation of multimedia-embedded word processors. The words are constructed in the center of the page and the multimedia icons, hot spots, and triggers are added around the edges, as annotations, and as colored boxes around the words.

The process of multimedia composition might be termed "illumination" (based on IBM's popular "Illuminated Books and Manuscripts" program). "Illumination" starts with students authoring their own words or capturing words from books and magazines by scanning them with a simple hand scanner (like Logitech's ScanMan) and using an optical-character recognition (OCR) program such as CatchWord Pro to transfer the words into a common word processor.

The ScanMan, CatchWord Pro, and the new generation of multimedia word processors (such as Wings for Learning's MediaText) can transform the library's print collection from a remote, dusty "closet" of words into a rich treasure trove of words that can be translated into multimedia format, then illuminated with images, music, movies, and students' own oral narrations.

3. Libraries Must Offer Students Daily, Real-Time, Real-World Publishing Opportunities

Students' old research and writing tools gave them the opportunity to create "throwaway" projects destined for the teacher's folder, the student's backpack, or maybe the family refrigerator.

This is a publishing dead end and the students know it.

Students have little incentive to "show what they know" when it is obvious from the start that their audience will probably be only themselves, their teacher, or maybe Mom or Dad.

Libraries must give students an opportunity to publish to a larger audience. They can do this today using online, real-time methods to electronically publish their works. It's sad but true: For most students, print publishing is a black hole. Print documents can only realistically be shared by a few people. On the other hand, if students are able to publish their works electronically, they can be copied and communicated instantly, digitally,

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and circulated locally and globally in a matter of minutes.

Who would ever want to "read" stuff created by kids?

No one in today's hierarchical paradigm regards student works as "practice" drafts for their real, adult works of tomorrow. In a world filled with passive students using media passively, publishing is a peripheral, ancillary "afterthought." Students are not expected to do work that is truly original or that transcends the work of the teacher. So they don't.

But if you switch to an "active media" paradigm, then you see that it is possible for students to be creating materials that HAVE NEVER EXISTED ANYWHERE! If you accept that we are on the threshold of a new age of digital electronic knowledge — of instant, real-time communication and work in "virtual" offices and classrooms — then students are the first generation of authors who can create truly new works and prototypes using these new media formats. Students are, in fact, the best suited to be truly experimental with the new media and to work to transform knowledge in its current print-based format into multimedia constructions of the future.

And they need an audience. To get that audience they will need to go beyond media glitz and pizzazz, since media moguls in Hollywood, Tokyo, and Silicon Valley will create multimedia productions that wow and dazzle the senses and the mind. Student productions should be more serious that that. They should concentrate on issues, concerns, themes, and topics that they encounter every day inside and outside the classroom. Student multimedia publishing can be instructionally focused on environmental issues facing a community, on homeless people, on health insurance, on parenting and family lives, on making better decisions about money, nutrition, substance abuse, and sexuality. These are issues that are already on every student's mind but which are frequently unarticulated, undigested, and amorphous. They are also issues that could make student authors' work interesting and entertaining to other students down the hall or around the world. Productions on these issues would also be informative and instructive to parents, to local businesses, to public agencies — to everyday citizens in the students' own community.

We have the opportunity to make every classroom a "classroom without walls." Every classroom may soon have access to a "video dial tone" that links your students with students in St. Petersburg, Singapore, Beijing, or Caracas, Venezuela. Student researchers can use new multimedia "index cards" including video cameras, tape recorders, and notebook computers to become real-world researchers to see things with their own eyes, hear things with their own ears, and tell their story with their own voice. They can take raw materials they gather in their community and mix them into a larger brew of electronic and print-based materials that they have assembled in their library media center.

The incentive for students to work their hardest and do their very best work and meet deadlines is that they will have an electronic publishing "window" back out to the real world — to other students in other classrooms, to parents, their community, the news media, and government agencies. With the new multimedia interactive cable channels coming (500-1500 channels in the next two years), a library can become a "broadcasting studio" that can send students' interactive works over the wires to any place in the world for the cost of a phone call.

And student "publishing" in real-time will be a compressed two-way street rather than the formal, plodding one-way publishing it was in the paper-time past. When students "publish" their work, it will become the first statement in a "conversation" in which people react to the students' work and reply. The replies can occur in the form of people in their homes keying in replies over cable-TV keypads. They can come in the form of business leaders in the Rotary meeting or Chamber of Commerce replying live in a two-way video teleconference with the students in the classroom. They can come from world leaders, from students around the globe as real-time discussion or in the form of "quick-&-dirty" multimedia productions. Publishing in the future using dynamic media will come to mean a mutual conversation — a PROCESS — rather than the output of a static, unchangeable product that an author "writes" and a reader (sometime in the future) can only "read."

4. Libraries Must Become a Hub for Inservicing Teachers in New Tools for Exploring and Sharing Knowledge

Based on the discussion in the two earlier articles, you can see that it is not enough to turn the students into multimedia authors, researchers, and explorers.

Students in today's schools are an unrecognized source of new-media literacy and competence. Unfortunately, the only evidence most teachers see of this is students' devotion to violent, trivial video games, or to couch-potato consumption of electronic media in the form of Walkmen, CD players, and MTV.

Students could become a pool of trainers, troubleshooters, and consultants who could fan out into a school building as a webwork of support for the set-up and operation of new-media tools in every classroom. But it would be a disaster to just assign them this job and turn them loose. All the worst expectations teachers have would surely be borne out: Students would almost certainly be poorly prepared for such an important responsibility. They would probably do more harm than good.

The problem is that few of today's students have been given the trust and responsibility to manage their schedules, nurture and coach other learners, operate as courteous, respectful, and helpful consultants, give their "all" in the solution of tricky technology problems, or act maturely in a group that fosters fair and spirited discussion, group problem-solving, and task-completion.

The library media center could be the training ground for a new kind of student of the future — a student that MUST emerge to prepare for tomorrow's problems and for needs troubling today's schools.

A library media center could sponsor a series of "Student Inservices" all year long in which students learn how to work together as high-performance "swat" teams who could be launched, at a moment's notice, to any part of the building to do some "just-in-time" training, set up equipment, or save a teacher from a technology black hole. These student "glitch-busters" and "teacher savers" can be trained to make teachers look good and feel good about themselves and about the munchkins who come into their room to help them out.

The Student Inservices could be conducted after-hours as a "Multimedia Club." This would take the pressure off the library media specialist to manage the club during regular library hours. Also, the student club could help the library media specialist preview software, new media, and help her set up new equipment. The library media specialist could train the students with the help of a "Teacher Explorer" team of teachers who were interested in seeing the students take on responsibility for helping teachers and other students around the school. The

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technical training of students would go hand in hand with the group-process training that prepared the students to be effective coaches, teacher helpers, and technicians around the school.

To test the club's effectiveness in training a cadre of student consultants, the media specialist could begin inviting teachers to club meetings. The teachers would be the "guinea pigs" for student consultants. The teachers would be "off the clock" and not in front of a classroom of kids with curriculum deadlines, buzzers and bells to stress them or distract them. They could give feedback to the students on how effective they were, encouraging them to take their first hesitant steps into new areas. Rotating several faculty members through the club in this role on afternoons over a semester would expose the building's teachers to a new role for students and would help prepare them for students to visit them as consultants, student coaches, and troubleshooters. It would help teachers evolve comfortably into a new role in which they didn't know everything — and weren't afraid to show it! It would help them see how they could still guide and inspire students even as they discovered that they, too, could become excited and enthusiastic learners.

Over time the student inservicing would gradually blend with teacher inservicing and teacher-student inservicing. This process would be gradual and would maintain a high comfort zone for teachers and students alike. At the end, there would be a cadre — a critical mass — of non-age-specific "TEACHER EXPLORERS" available to the school. The adults would see how they could still be teachers but would also see themselves as learners and explorers. The young people would get into the habit of active, fast-paced exploration, problem-solving, and learning, but would also begin to see themselves as "TEACHERS" who had the responsibility to share what they had learned with teachers around the building and with their fellow students.

The impact of this strategy on a school will be enormous:

- A growing webwork of students will act as a "safety net" to support ongoing schoolwide experimentation with a boggling array of new technologies.

- Students will gain just the sort of skills experts say they will need in tomorrow's world, including: communication skills, problem-solving skills, skills using new technologies to think with and as tools, group process skills, teaming skills, coaching, nurturing, planning, managing, and training skills.

- Teachers will gain a growing cadre of students who will be respectful, courteous, and genuinely helpful. These students will gradually impact on the school culture and "rub off" on other students who can then become ready recruits into a growing network of student "construction crews," "swat teams," and trainer/coaches.

The whole process will unleash the vast yet invisible reservoir of "trapped" brainpower that is latent in today's classrooms, and will enormously accelerate both the classroom learning process and a school's ability to digest and productively use new technology tools as soon as they are affordable and available for daily use.

5. A Library Has to Go Beyond its Technical Role of "Book Center" or "Media Center" and See Itself Instead as a "Human Communications Center."

It is self-limiting in the real-time, online electronic world of tomorrow to think of a library media center as a "center" for stuff.

As library collections evolve from print-based materials to more abstract electronic representations of knowledge that are only transitory and "in transit," it will become foolish to think of a media center specialist as a person who has to "manage" a collection of media. The media will actually reside in the media center less and less. Instead it will be in the process of being "input" into the center, massaged, researched, and digested by hordes of student authors and investigators, then "output" to classrooms around the building, around the district, and to other sites around the world.

In the future, don't think of the library media center as a Warehouse, Attic, or Storeroom, think of it as a Grand Central Station of Knowledge. Students and teachers will rush through this busy, noisy hub catching trains of knowledge as they whisk into the station, then reconfiguring and rebuilding these trains and riding and sending them, lickety-split, back out of the station. This sort of creative, chaotic hubbub will go on ALL DAY and EVERY DAY.

The real value in the library media center will not even be theknowledge itself but the ongoing human-to-human COMMUNICATION that it spawns. Thus, the library media center should remake itself as a "Communications Center" rather than as a static center that stores stuff or where stuff can be found.

Knowledge itself will become a more fluid, compressed, interactive, conversational substance than it is today. Once we recognize this we will see how it really looks more like "communication" than the stereotype of stacks and shelves filled with inert, fossilized knowledge that has to be unlocked by a single learner plodding tediously, page after page, through a linear stream of print-based symbols.

Knowledge in the future will be multisensory, sharable, modifiable, revisable, instantly published, joined, and divided.

Just like a fast-paced intellectually stimulating conversation!

Knowledge as conversation. And the library media center will be the kitchen table where the best kinds of instant, real-time conversations start.

The media center will launch important new conversations that students and teachers can take back to the classroom where they can be added to and enriched by further conversations that spark everyone to make a contribution and make their voices heard.

Baby Steps & Knowledge Theme Parks

In the next issue we'll look at a ten-step "recipe" for principals, teachers, media specialists and computer coordinators to use to transform today's library media centers and computer labs into a launch-pad for school change. Then we'll look at the new kind of classroom learning that such a center will engender.

Featured Article

Beyond Multimedia: Four Practical Paradigms for the Appropriate Use of Affordable Technologies

Beyond Multimedia

Paradigm Four: The Classroom as a Hands-on Knowledge Theme Park

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Show What You Know

Howard Gardner in his book, *UnSchooled Minds: How Children Think* (BasicBooks, 1991), envisions classrooms in the future in which children create multimedia exhibits to demonstrate their understanding of different curricular topics.

"Show What You Know" could be a basic methodology for students who have access to multimedia research, composition, and publishing tools. Students could create multimedia book reports, biographies, math story problems, and science projects. They could store their "works" on audio tapes, videotapes, and computer diskettes. If the classroom is on a central computer network, the students' work could be stored on a building "server" computer and shared with students in other classrooms. Each student would get the opportunity to exhibit their work in a public exhibition on a rotating, periodic basis (let's say, once a month). Their knowledge demo would reside on one of the classroom's audio cassette players, VCRs, computers, etc. This assortment of low-cost *knowledge players* could be scavenged from the library media center, from children's homes, or donated by businesses or the PTA.

The classroom would resemble an art gallery or hands-on science museum that always has a variety of exhibits on display. The different exhibits would be loosely linked by a common curricular theme. They would rotate frequently as the class as a whole journeyed into new curricular areas and as different students' work was placed on display.

It is likely that there would be a limit to the number of *knowledge players* that the teacher and her kids could scavenge. Therefore, it would be helpful to organize the students into teams. The teams would collectively produce a single exhibit. They would be responsible for designing the exhibit, getting the permission of the teacher to produce the exhibit, exhibit production, and exhibit set-up, troubleshooting, maintenance, and clean-up.

The exhibits would be "launched" or "debuted" every couple of weeks. Guests at the exhibit debut could include parents, other teachers and students, the school principal(s), district officials, school board members, local business people, etc. Having their work featured publicly would be a great incentive for student teams to work hard and create the best exhibits possible.

Many of the exhibits could tie the curriculum topic (e.g., presidents, the environment, Spanish, fractions, etc.) to research the students did in the school, the neighborhood, or the community. Therefore it would also be beneficial to invite members of the community who participated in the exhibits' creation to the public exhibitions — for example, local health officials, firefighters, recycling organizers, librarians, museum officials, plant foremen, radio DJs, senior citizens, etc. The community's attendance at and participation in these public exhibitions of student work would build crucial sup-

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port for the teacher's innovative learning design and would link classroom projects with real people and real issues in the world outside the classroom doors.

Electronic Portfolios

There is a lot of talk these days in educational circles about "authentic assessment" and student portfolios. This concept of students' work being collected and used as part of a student's grade would work well with the classroom as a collection of ongoing student multimedia exhibits.

Many programs that support student portfolios have been implemented using print materials alone. However, most experts agree that in the future knowledge will be transmitted via electronic non-print means. Therefore, it is important for students' portfolios to contain some or most of the students' work in an electronic format.

What kinds of electronic portfolios might students create? There are a variety of low-cost opportunities. At the beginning of the school year a teacher could send a form home to parents requesting a contribution for class-wide purchase of one (or all) of the following portfolio "containers":

- A blank audio cassette (approximately 50 cents)
- A blank videotape (approximately $3.00)
- A blank computer diskette formatted to run on a classroom,library, or computer lab computer (approximately $1.00)

During the year as a student worked with other student exhibition teams to create multimedia exhibits, the student could store his or her individual work on the appropriate storage medium (disk, cassette, or videotape). In addition, when each exhibit was finally created it could be "dubbed" onto each of the team members' portfolio containers. An interactive version of the exhibit could be loaded onto diskette. A video version could be loaded onto videotape. And the audio from the exhibit could be dubbed onto the audio cassette.

Gradually a student's portfolio containers would fill up with their accumulated individual and group work, creating an impressive presentation of their projects and accomplishments from an entire school year. Since each team exhibit would feature a different area of the curriculum, a student's entire portfolio would be varied, diverse, and cross-curricular. At least the videotape and the audio cassette (and possibly the computer diskette) could be carried home periodically to demonstrate in a private exhibition to a student's parents, family, and friends. This would keep parents current with their child's academic progress even if they were unable to physically attend one or more of the public exhibitions.

Interactive Kiosks

What would the students' exhibits look like?

The form and content of each exhibit should be limited only by the availability of inexpensive materials and the students' imaginations. During the year students could create a variety of exhibits, some complex and some extremely simple.

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What shape might the exhibits take? For example:

- A VCR and TV monitor — with a "how-to" Guide Book or laminated poster explaining the purpose and operation of the exhibit.
- An audio cassette player — with how-to materials.
- A computer running the students' disk-based exhibit — with how-to materials.
- Any combination of the above.

Each exhibit would try to achieve the status of a standalone, interactive *kiosk.* A kiosk is an "information booth." Originally, a kiosk had one or more people inside it who could be asked questions related to travel, store purchases, or directions inside a building or public facility. Kiosks also might contain informational materials, including newspapers, magazines, guide books, and brochures.

Today electronic kiosks are popping up all over the world, playing the role of people-based kiosks of the past. An electronic kiosk usually will have a colorful screen that mixes computer graphics and stored video segments. People can ask the kiosk questions by typing on a keyboard attached to the kiosk or by pressing on "buttons" or "hot spots" on the computer's touch screen. Many kiosks have printers inside their display case and will print out a "hard copy" of information for people to take with them.

Student Kiosks

Students' *knowledge kiosks* could be modelled after other electronic kiosks, chiefly those found in hands-on science museums, zoos, airports, and theme parks.

The chief criteria for judging a student kiosk should be:

- **Ease of Use**

A hallmark of well-designed kiosks is their user-friendliness. A person can go up to a good kiosk and not need detailed instructions or training to be able to use the kiosk and get the information they need. A recipe of instructions for using the kiosk should be short, simple, and easy to read. It might be contained, in audio form, at the beginning of an audio cassette; in video form, at the beginning of the videotape; or as a simple menu of "buttons" on the first screen the user sees on a computer-based exhibit. It could also be a one-page printed "recipe" that sits beside the exhibit on a table or hangs behind the exhibit on the wall.

- **Interactivity**

A well-designed kiosk makes the user part of an active "conversation." No one likes to talk with people who monopolize conversations. After awhile they stop trying to participate in the conversation, and they tune out, get bored, get rude, or simply walk away. Similarly, few people will enjoy a kiosk that simply "talks at them." On the other hand, most people will respond well to a kiosk that asks them questions, challenges them with little puzzles, mysteries, or riddles, and feeds them information that is interesting and in short "chunks."

- **Accuracy**

A kiosk is a source of information on topics that are presumably new or unfamiliar to the average user. It is essential that all the facts loaded into the kiosk and embedded into its presentation be accurate and doubly checked. Student teams who create kiosks should appoint a couple students as "fact checkers" to verify that the information they recite (orally into an audio kiosk), picture (visually in a videotape kiosk), or write (in a graphics and text-based computer kiosk) be current and correct.

- **Professional**

Even the most glitzy electronic kiosk will look shabby and amateurish if basic rules of presentation are not followed, including:

- Good punctuation and a simple writing style.
- Spell checking.
- Grammar checking.
- Large graphics and easy-to-read text.
- Simple, elegant, uncluttered screens.
- Short, simple video segments shot on a tripod.
- Good, even volume for all music and sound.
- Spoken segments that are easy to understand.

A professionally produced kiosk that only contains one minute of informative materials (written, spoken, videotaped, or accessed through computer onscreen menus) is far superior to a "hodge-podge" kiosk that rambles on and on with globs of undigested information that is boring or obscure.

- **Legal and Responsible**

A well-designed student kiosk minimizes the use of outside, copyrighted materials. The more the students incorporate copyrighted materials the greater the risk of legal infringement on others' intellectual property rights and the temptation to use other people's creativity and thinking in place of their own.

When students use their own original (spoken, written, graphics, and video) materials to produce a kiosk they have the opportunity to create an entirely "fresh look and feel" that is not imitative or derivative of any other production seen by the kiosk's users.

- Students can use their own voices to narrate all spoken parts of the kiosk.
- Students can sing the background music from original student compositions.
- Students can use musical keyboards and regular acoustic instruments to create background music.
- Students can shoot their own original video materials, paint their own computer graphics (or scan in original student artwork in other media such as watercolors), and take microphones and cassette recorders onto street corners and to rivers and train stations to record their own original sounds.
- Students can choose from a wide variety of low-cost *clip* media that is flooding the market with public domain music, sounds, clip-art, clip-video, etc. to enrich their own original presentations.

However, if students choose to use copyrighted materials from books, videotapes, audio tapes, compact discs, or computer disks (and CD-ROMs), they should use them sparingly and selectively, and they should create *multimedia footnotes* and *multimedia bibliographies* to give proper credit to the copyright holders and creative talents who own the works.

Students' multimedia credits for copyrighted materials can take a variety of imaginative, playful, and fun forms, including:

- Pop-up text buttons on the computer screen.
- Audio credits with sound effects and dramatic fanfare on audio kiosks.
- Student-created credit screens on computer kiosks.
- Animated credits on videotape.

How to Begin

Does the idea of setting up student-created knowledge kiosks and coordinating the creation of student electronic portfolios intrigue you?

Does it also overwhelm you?

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These ideas may excite you, but you can't help thinking about things such as:

- How to manage student teams.
- How to scavenge the equipment.
- How to set up the whole operation.
- Where to find the time in your daily classroom schedule.

These are real concerns. Therefore, the best place to start is to consult with your library media specialist and with a small group of fellow faculty members who might share your enthusiasm for these ideas. Many schools have successfully launched *electronic portfolio* programs and *knowledge kiosk* programs, but they usually don't begin the programs in the classrooms. Rather, they usually choose the library media center as the launch pad for innovation and exploration. The media center is a perfect place for experimentation and prototyping. Then when a workable model is up and running, teachers can choose to "import" a manageable version of the model back into the classrooms for classroom implementation.

A Recipe for Success

A twelve-step model to use the library media center to launch portfolio and kiosk programs in the classroom is outlined below:

Step One
Form an instructional team composed of teachers, the library media specialist, the principal (or curriculum director), and the computer coordinator.

Step Two
Form a kiosk-design team composed of students chosen from one or more classrooms and/or grades. The students must have certain skills, including interest in and/or aptitude for using media, good social skills including — ability to cooperate and compromise, ability to share, nurture, and coach, ability to lead or work as part of a team on a collaborative project.

Step Three
Set up an after-hours multimedia club. The club will be composed of the teacher team and the student team. The purpose of the club will be to talk about the electronic kiosk and portfolio projects and to begin planning the first couple of steps. The club meets in the library media center.

Step Four
Design two or three prototype kiosks. Keep it simple! Don't get too ambitious! Make the first couple kiosks simple, easy, short, and do-able! (Stick with a simple computer slide show, or a short audio cassette or fifteen-second "PSA" — Public Service Announcement videotape.)

Step Five
Scavenge equipment and set up two or three electronic kiosks (a VCR and TV; or an audio cassette player; or a computer and color monitor).

Step Six
Produce simple programs for the kiosks. Test the kiosks among the teachers and students in the club. Make the entire effort highly collaborative and experimental. Have everyone take turns demonstrating and showing off the kiosks. Pretend you are a parent, a school board member, or another student who has never used the kiosk.

Would the person find the kiosk:
- Interesting?
- Informative?
- Easy to use?

If not, how can you improve your design?

Step Seven
Organize an Open House in the Library Media Center. Set up the kiosks and do

your first public exhibition. Create a short survey form to get public feedback on the kiosks.

Step Eight
Take the kiosk(s) on the road. Put them on low, safe, wheeled carts that students can safely push around the building (on one floor only!). Let the students present the kiosks in classrooms as a "visiting teacher" who uses the kiosk as a multimedia audio-visual chalkboard. Gauge student and teacher reactions to the student, their presentation, and the effectiveness of the kiosk. Invite students in each class to use the kiosk.

Step Nine
Set up the kiosks back in the media center for classes to use when they visit the library media center. Have short "suggestions" forms beside the kiosks to encourage student and faculty feedback.

Step Ten
Train classes on kiosk design. Work with original teachers who participated in the program. Have them create assignments in which students visit the library, create kiosks during library periods, and roll the finished kiosks back to the classroom for classroom presentations and daily or week-long exhibitions.

Step Eleven
On a teacher by teacher basis, experiment with loaning the kiosks to the classroom for in-classroom production of kiosk exhibitions.

Step Twelve
Scavenge enough equipment to create one or two pilot classroom kiosks for teachers willing to keep kiosks in the classroom for ongoing creation of new kiosk programs and ongoing kiosk exhibitions.

Conclusion

This concludes my series of four articles for the *Connections* newsletter under the series title: "Beyond Multimedia: New Paradigms for the Appropriate Use of Technology."

If you have enjoyed this series, or you have questions regarding the ideas in the articles, please contact me at: Multi-Media Classrooms, Inc., 4121 Okemos Road, Suite 24, Okemos, MI 48864-3220. (Fax me at 517-349-3657. Applelink me at: D5766. Or FIRNMAIL me at DIGNAF)

To experiment with some of the exciting technology resources that are referred to in these articles, you should schedule a visit to the Multimedia Training, Research, and Development Center at the University of Central Florida. This center has been created to allow educators to "preview" new electronic teaching materials in a non-commercial, classroom-like setting and to provide training for teachers (see workshops p.7). For more information, please call the UCF/DOE Instructional Technology Resource Center at 407-823-5045 or 1-800-226-5045 (FL only).

It has been a real pleasure to write these articles. I hope you have gotten some ideas you can use in your media center or classroom.

We are entering an exciting era which will reward educators who experiment with new electronic teaching materials. However, there are so many opportunities that your choices for experimentation and innovation are mind-boggling and almost overwhelming. Therefore, the important thing is for you to think collaboratively and hook up with like-minded teachers and student assistants. And when you jump in, be prepared to make mistakes and take wrong turns just like any real explorer or pioneer blazing a trail into an uncharted land. And when you, your fellow faculty members, and your students begin your journey together, remember to have fun and keep it simple! (Pioneers pace themselves. They survive so they can pioneer another day!)♦

Multimedia "Menú del Día"

Una Receta de Diez Pasos

Por Fred D'Ignazio

Si ha oído hablar de la maravilla que es introducir ✪multimedia al salón de clase, pero no tiene experiencia, no cuenta con los recursos o el dinero necesario para comenzar, entonces, este artículo es para Usted. La estrategia "Multimedia-Menú del Día" está basada en un cuento clásico para niños: "Sopa de Piedras". Una versión de este cuento dice que un mendigo llega a un pueblo prometiendo hacer una sopa deliciosa con agua y piedras. Al principio los lugareños dudan y se burlan de él cuando se imaginan una sopa hecha de únicamente de agua y piedras. Sin embargo, poco a poco, los habitantes del pueblo empiezan a creer en la visión de lo que la sopa puede llegar a ser y contribuyen con verduras, harina, carne y otros ingredientes de sus propias despensas. Al final las piedras del mendigo prueban su magia ya que se convierten en el catalizador que hace que la comunidad haga pequeñas contribuciones individuales que al combinarse forman una sopa nutritiva y deliciosa que todos pueden compartir. Las piedras mágicas invocan un sentido de prodigio que dejan que la comunidad tenga la visión del mendigo de lo que se puede convertir en realidad. Actúan como imanes para atraer los recursos de la comunidad. De la misma manera, sus alumnos pueden crear pequeños centros de publicación de bajo nivel tecnológico que sirvan de escalón para llegar a centros más elaborados a través de compartir, participar, asociarse y colaborar. Abajo encontrará una receta de diez pasos para que Usted y sus alumnos puedan crear centros de publicación con escasos recursos. Estas estaciones actuarán como "la sopa de piedras" que atraerá recursos adicionales de su escuela, padres de familia y la comunidad. Además de ofrecerle los siguientes beneficios:

1. Ya puede poner estas estaciones.
2. Estas estimulan varios resultados educativos positivos en sus alumnos incluyendo:
   - Orgullo de ser autores.
   - Ser dueños del proceso de aprendizaje.
   - Trabajo en equipo y cooperativo.
   - Innovación.

Los alumnos que utilizan esta estrategia refuerzan su capacidad de comunicación, mejoran su disposición hacia la escuela y aprenden a resolver problemas como parte de un equipo. Adicionalmente aprenden a enseñar, entrenar y formar a otros como parte de sus responsabilidades diarias en el salón. Aquí tiene diez pasos para crear estas estaciones de "sopa de piedras":

❶ Agrupe a sus alumnos en equipos para trabajo de composición escrita.

❷ Haga que sus alumnos firmen un contrato (vea ejemplo)

❸ Los equipos generan un inventario de material y equipo con el que cuentan (use hoja de trabajo).

❹ Recolectar el material en su salón.

❺ Los equipos utilizan el material para crear mini-centros de publicación (vea centros ejemplo).

❻ Los equipos emparejan los centros a diferentes estilos de aprendizaje. (vea hoja de trabajo).

❼ Los equipos escriben recetas o guías cortas para el uso de cada mini-centro.

❽ Los equipos prueban las recetas con compañeros -pilotos de prueba- y con Usted.

❾ Los equipos publican las recetas en forma de carteles, libros de "cocina", y otros medios diversos (ejemplo:

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✪**Multimedia:** Aplicaciones de tecnología que incluyen imágenes, sonido y/o imágenes en movimiento que pueden ser interactivas y que actúan sobre dos de nuestros sentidos: vista y oídos.

Tara

EDUTEC

Los profesores de Español de nuestra escuela les gustaría contactar clases que hablen Inglés en México para establecer correspondencia vía Internet (Keypals).

Nuestros alumnos empiezan con el Español en 5to. de primaria y continúan hasta 2do. de secundaria. Nos gustaría intercambiar cartas que escribiríamos en Español y que su escuela contestaría en Español. Podríamos en forma intermitente escribir en inglés para ayudarlos a ustedes también! Somos una escuela masculina independiente que va desde kínder a 2do. de secundaria en San Francisco, California. Mande un correo electrónico a:

donlan@town.pvt.k12.ca.us

Estamos por iniciar varios proyectos en México utilizando Internet. Si le interesa ser guía o encargado en su localidad, comuníquese con nosotros. Envíe un correo electrónico a:

aste@buzon.main.conacyt.mx

Multimedia "Menú del Día"...

Equipos de Alumnos Autores

Ejemplo del Contrato del Estudiante

Yo _____(nombre), trabajaré con mis compañeros para ayudar a mi profesor(a) a:
(1) Buscar, localizar y ensamblar tecnología nueva para usar en nuestro salón.
(2) Administrar y operar todo el equipo en forma segura, justa y cortés.
(3) Reparar, resolver problemas, arreglar y encontrar la forma de usar el equipo para aprender, enseñar y ser autores.
Yo compartiré responsabilidades con otros alumnos para escribir guías simples (recetas), que ayudarán a otros a aprender a realizar tareas útiles con el equipo.
Yo dividiré mi tiempo en forma equitativa entre aprender las nuevas tecnologías y compartir mis conocimientos con otros (compañeros, profesores y padres de familia).
Yo sé que mi profesor(a) no puede resolver el uso de la nueva tecnología solo. Mi profesor(a) necesita la ayuda de cada alumno del salón para:
(1) Buscar la mejor tecnología.
(2) Traerla al salón.
(3) Conectarla y hacerla funcionar.
(4) Enseñarle a otros cómo funciona y
(5) Administrar los proyectos para que todos en el salón (incluyendo al profesor!) obtenga experiencia trabajando con la tecnología para hacer cosas útiles y padres.
Como resultado, entiendo que si los alumnos no cooperan y ayudan a nuestro profesor con la tecnología, entonces se verá obligado a minimizar el uso de la tecnología en nuestro salón (aunque sólo sea para estar dentro de lo programado y mantener su cordura).
Como un ayudante de tecnología y entrenador, trataré de recordar lo que se siente cuando se está aprendiendo algo nuevo en un área desconocida. Seré cortés y utilizaré palabras amables para animar a que otros den sus primeros pasos en la tecnología. Y trataré de concluir todos mis proyectos personales y de grupo dentro del tiempo programado. Por último, recordaré que mi calificación no depende tanto de que yo sea un genio tecnológico sino de que sea un buen profesor, amigo y ayudante.

_____	_____	_____
Firma del Alumno	Fecha	Firma del Profesor

(Por favor haga que sus alumnos se lleven el contrato a sus casas para que sus padres también lo firmen.)

Multimedia "Menú del Día"...

Inventario de Multimedia

Equipo disponible: Tiempo Completo (C), Diario (D), Semanal (S)
(Fuente: ___Casa ___Escuela)
Escuela_____
Nombre del Alumno_____
Teléfono:_____
Poner para cada **Artículo**: **Marca/Tipo**, y si esta disponible **C,D o S.**

Artículo:

1. Carrito con ruedas
2. Audífonos
3. Micrófono
4. Tocadiscos
5. Grabadora
6. Teclado Musical
7. Extensiones, tira de conexión
8. Videocasetera
9. Televisión/ Monitor
10. Video cámara
11. Cámara de bolsillo
12. Cámara Polaroid
13. Trípo de para cámara
14. Reproductor de Discos Compactos
15. Radio
16. Videos Educativos
17. Casetes de Audio Educativos
18. Discos
19. Discos Compactos de Audio
20. Plumones, Crayolas, etc.
21. Papel para Carteles, etc.
22. Atril
23. Computadora
24. Impresora
25. Procesador de Palabras (programa)
26. Programas para dibujar y pintar
27. Programas Multimedia
28. Cintas de Video Vírgenes
29. Cassettes de Audio Vírgenes
30. Disquetes Vírgenes
31. Papel de Computadora
32. Cinta o Cartucho para Impresora
33. Pilas tamaño AA y de 9 voltios.
34. Caja toma corriente AV
35. Cables corriente AV (¿tamaño?)
36. Adaptadores corriente AV
37. Reproductor de Discos Láser
38. Discos Láser
39. CD-Rom
40. Programas en CD-Rom
41. Tarjeta y Caja para Capturar Video
42. Tarjeta y Caja para Capturar Audio
43. Convertidor de Video de Computadora a Videocasetera/TV
44. Modem
45. Linea Telefónica al Salón
46. Cable Telefónico
47. Programa para Modem
48. Otro
49. Otro
50. Otro

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recetas en video, en casetes de audio, etc.)

⑩ Los equipos conducen servicios de capacitación con los demás compañeros del salón para entrenarlos (y a la vez ser entrenados) en las nuevas técnicas que han creado. Haga de este proceso de diez pasos algo circular de manera que genere ciclos sin fin de innovación y experimentación en su salón. En cuanto un equipo llegue al paso 10 haga que regrese al paso 3 y que empiece a inventariar el material nuevo que vaya llegando a su salón. Al reciclar este proceso, puede crear un salón de clase que acelere el aprendizaje al absorber nuevas herramientas y estrategias a medida que vayan haciéndose disponibles. Terminará creando un salón de aprendices de profesores que lo ayudarán a transformar la materia prima tecnológica, de medios y los hechos, en habilidades poderosas, actitudes mentales y procesos de aprendizaje.

Investigar - Ser Autor - Publicar

Lista para Planear y Montar Mini-Centros

La siguiente lista no es ni obligatoria ni exhaustiva, es sugerente. Usted y sus alumnos pueden usar esta lista junto con el Inventario de Casa y Escuela y sus hojas de trabajo llamadas "Emparejando Mini-Centros con Estilos de Aprendizaje de los Alumnos" Depende de Usted el construir los mini-centros que mejor se adecúen a Usted, sus alumnos y su salón de clase. Otro punto, no trate de armar todos los centros a la vez. Lo ideal es que la fase uno, el proceso de "mini-centro" debe tomar desde un mes hasta todo un semestre.

Aquí tiene algunos centros que PUEDE elegir montar:

CENTRO DE AUDIO:

(Ejemplo de componentes)
* Grabadora
* Micrófono, Audífono
* Casetes Vírgenes

Sonidos de fondo opcionales:
* Grabadora (o reproductor de Discos Compactos, Caja de Boom, o Aparato de CD-ROM)
* Cintas con efectos de sonido (o CD, o CD-ROMS)

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* Pequeño teclado musical
* Tocadiscos - Discos
* Instrumentos Musicales y voces en vivo.

CENTRO DE VIDEO:
(Ejemplo de Componentes)
* Cámara de video
* Trípode
* Atril (para señales, animales, piedras, fósiles, dibujos, etc.)
* Cinta adhesiva (para colgar dibujos de los alumnos a la pared como dibujos y títulos para los videos)
* Cintas de Video vírgenes.
* Micrófono / Audífonos.

Fondo de Video Opcionales:
* Segmentos grabados de programas de noticieros. (sin reserva de derechos de autor)
* Segmentos grabados de televisión por cable (sin reserva de derechos de autor)
* Videos educativos
* Videos personales

CENTRO DE ESCRITURA:
(Ejemplo de Componentes)
* Libretas de apuntes, lápices, plumas

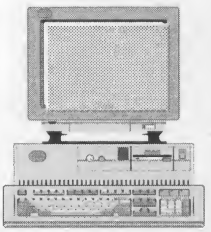
Opcional

* Procesador de Palabras (programa)
* Computadora
* Impresora
* Disquetes en blanco

CENTRO DE GRAFICOS
(Ejemplo de Componentes)
* Plumones, Crayolas, Pinturas, etc.
* Tablero para carteles, cartulina, etc.

Opcional:
* Programa de Gráficos o para pintar (Hyperstudio, Multimedia Scrapbook, Digital Chisel)
* Computadora
* Impresora

CENTRO DE INVESTIGACION Y CAPTURA
(Ejemplo de Componentes)
* Libros, Revistas, Periódicos
* Tarjetas



Indice, Plumas, Lápices

Opcional (Costo bajo)
* Computadora
* Micrófono, Audífonos
* Tarjeta de sonido (únicamente PC)
* Atril
* Hyperstudio (Mac/IIgs), Multimedia Scrapbook (Windows), Digital Chisel (Mac)

Opcional (Costo alto)
* Televisión por cable
* Videos educativos
* Reproductora de discos láser y discos láser
* Reproductora de CD-ROM, Imágenes de Clip Art y sonido en CD-ROM, etc.
* Scanner de mano
* Cámara digital
* Convertidor de video a computadora

CENTRO DE TELECOMUNICACIONES
(Ejemplo de componentes)
* Computadora
* Modem (y cable de computadora)
* Conexión a línea telefónica externa
* Software para modem
* Servicio de telecomunicaciones (¡con número telefónico de conexión!) (Proveedor de Internet o servicios comerciales)

CENTRO DE TRAZADO Y EDICION CON COMPUTADORA (opcional)
(Ejemplo de Componentes)
* Hyperstudio (Mac/IIgs), Multimedia Scrapbook (Windows), Digital Chisel (Mac)
* Programas de Inspiración (Escribir, visualizar, esbozar, resumir)

CENTRO DE PUBLICACION MULTIMEDIA
(Ejemplo de Componentes)
* Computadora con programa Multimedia

Para publicar en Papel:
* Impresora, Papel, cinta o cartuchos de tinta
* Etiquetas y tarjetas para tarjetas de presentación de los alumnos
* Cartulina y papel para carteles y señales

Para publicar en disquete:

* Disquetes de alumnos en blanco

Para publicar en casetes de audio:
* Grabadora
* Casetes vírgenes

Para publicar en cinta de video:
* Cámara de video, trípode (Ponga el lente de la cámara en la pantalla de la computadora mientras los alumnos narran su guión al micrófono de la cámara.)

Opcional:
* Convertidor de computadora a video.
* Cables y adaptadores
* Videocasetera
* Televisión
* Cintas de video vírgenes (Cintas para portafolio del alumno, o de proyecto del equipo) Para telepublicar en una red:
* Centro de Telecomunicaciones (ver arriba)
* Programas que permitan agregar archivos (de texto, sonido, imágenes, de video, y o de programas multimedia como

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Hyperstudio, Scrapbook, etc.) a correo electrónico.
* Bases de datos que sirvan de "pizarrón de noticias" para guardar los trabajos de los alumnos.
Opcional:
* Software de conferencia en video (CUSeeMe)
* Mosaic, software que busque documentos y documentos multimedia.

Clases en Vivo

Equipos de alumnos pueden crear "exhibiciones", "clases", etc. en vivo frente a todo el salón. Los profesores pueden grabar estas presentaciones e introducir porciones de ella a los video "portafolio" de los alumnos. Estas cintas son evidencia vivida y dramática de la evolución que tienen los alumnos en su capacidad oral de comunicación, aprendizaje en cooperativa y habilidades tecnológicas.

Fred D'Ignazio correo electrónico (e-mail): dignazio@interserv.com
WWW HOME PAGE: http://www.tci.east-lansing.mi.us.mmclass/

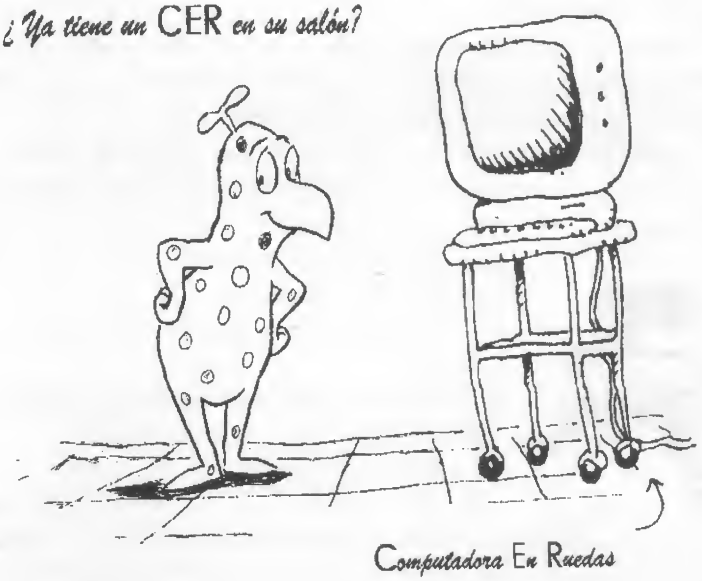
Uniendo Mini-Centros con Estilos de Aprendizaje de los Alumnos

Nombre del mini-centro:_____
Este centro apoya los siguientes estilos de aprendizaje:
_____
_____
_____
Equipo que necesitaremos para el mini-centro:
_____
_____
_____
Cómo podrán los alumnos usar este centro para Investigar:
_____
_____
_____
Cómo podrán los alumnos usar este centro para ser autores:
_____
_____
_____
Cómo podrán los alumnos usar este centro para publicar:
_____
_____
_____

El C.E.R.

La tendencia actual en la enseñanza es tener las computadoras en los salones de clase. De esta forma tanto los alumnos como los profesores las ven como lo hace cualquier profesional hoy en día, como una herramienta de uso diario. Además de promover habilidades tan importantes como son la enseñanza en cooperativa y el pensamiento crítico. El tener dos o tres computadoras en el salón tiene sus ventajas, especialmente cuando se está trabajando con procesador de palabras, impresiones o gráficos. Pero, la realidad es que la mayoría de escuelas no cuenta con un presupuesto que lo permita. Por ello, pensemos en una computadora por salón. Si aún esto es muy difícil, invite a un CER a su escuela:

Computadora
En
Ruedas.



Birmingham

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MAY 1987 $2.00

STAINED GLASS HISTORY:
100 Years at St. Mary's

MULTIMEDIA SANDBOX:
Electric Classroom Ideas

Birmingham

MAY 1987

BY SCOTCH GRAY

Multimedia Sandbox

A new multimedia classroom project is showing children how to build their own imagination network.

BY MARY JACQ TRAMMELL

Fred D'Ignazio (above) designed a program that turned 13 area classrooms into state-of-the-art media centers for kids and teachers.

Sometimes classrooms—much like sandboxes—can be the best places for kids to play. There they can excavate ideas and build mental sand castles.

That's the philosophy of Fred D'Ignazio, a high-tech magician who is turning 13 Jefferson County classrooms into multimedia sandboxes, a term he coined to refer to state-of-the-art media centers for kids and teachers.

The idea is to put electronics on wheels—carts supplied with computers, monitors, printers, video cameras, video-cassette recorders, synthesizers, speakers and cables, cords and adapters.

Students are then turned loose with the equipment to translate their ideas into video recordings, desk-top newspapers, audio productions or a combination of all three.

"Kids are not afraid in the least to press 40 buttons at a time. It's a sandbox to them. They're thinking it through, seeing what works. They don't read manuals, and they're not afraid of breaking the equipment," says D'Ignazio.

"I've written about technology for 10 or 15 years. I've become very interested in how frightened people become about using machines. What I was trying to do with the sandbox is create an environment in which we can become childlike in our approach to technology."

D'Ignazio is the author of more than 20 children's books on science and technology and is a regular columnist in *Compute!* magazine and *Compute!'s Gazette.* He appears from time to time on *Good Morning, America,* WBRC-TV's *Morning Show* and PBS's *Education Computing* and *The New Tech Times.* He also works as a consultant to the Children's Television Workshop, *Consumer Guide* and numerous other companies, school systems and publishers.

When Ron Jones, director of staff development for Jefferson County Schools, was looking for someone to conduct some computer workshops for his teachers last year, he was referred to D'Ignazio.

The computer expert, in turn, had a contract with a textbook publisher to write a teacher's guide for the multimedia classroom. He needed a group of teachers for a pilot project.

Jones and D'Ignazio decided to collaborate on some workshops last summer and fall, using a small amount of federal money Jones had set aside for computer training.

"We had small hopes compared to what developed," says D'Ignazio. He had hoped to recruit one or two schools for the pilot project. But 75 teachers attended the workshops and wanted to become part of the project.

"Without embarrassment, teachers climbed onto tables and aimed their video cameras at their classmates," says D'Ignazio, describing the workshop sessions.

"They shot irreverent closeups of my ears, knees and beard. They wrote haunted house stories on the computer and set them to music. A recent workshop ended with one teacher videotaping the rest of us holding up a computer banner that read 'All It Takes Is *All You've Got.*' Some of the teachers blew and popped bubbles. All of us danced together to Beethoven's Third Symphony."

The teachers who wanted to be part of the pilot project were asked to write proposals, including 10 lesson plans each. Proposals flooded in and filled a thick notebook with ideas for D'Ignazio's book. In turn, he selected 12 county schools and one Vestavia school for the pilot multimedia project.

Some of the schools already had a few of the components needed for multimedia centers, but most needed video cameras and assorted other pieces. The teachers, Jones and D'Ignazio set out to get more components through school money, ingenuity and the generosity of local and national electronic suppliers. D'Ignazio's plentiful contacts resulted in sponsorships by 18 national and seven local companies.

Today, in the 13 multimedia classroom project schools—nine of them with complete centers—children can be seen and heard using video cameras, producing strange electronic sounds, developing professional-looking printed materials, manipulating images on video screens, building their own imagination network—in short, enacting a 21st century bazaar of exotic, high-tech images and sounds.

"The rooms are literally alive with interest, excitement and commitment from [children] who are turned on to learning," says Mara Jambor, project coordinator at Cahaba Heights Community School, flagship school in the project.

"This, hopefully, opens up a new area for kids. It's teaching these kids thinking skills."

"I've been around a long time, and I have not seen such excitement generated among teachers before," says Jones.

"I just sing the praises of the teachers here. You have to have a big imagination to visualize how to use this technology when you're not familiar with it. Then you have to jump in and wrestle with cables and hardware and software," D'Ignazio says.

Janie Beale of Cahaba Heights teaches mathematics and science to sixth graders, subjects that could be considered "dry" without the use of media. Her "Rotten to the Core" science lesson was an example of a learning experience that was anything but dry.

She played symphony music mixed with insect sounds while students lay on the carpet in a darkened classroom. Tubs of foliage and rotten and decayed leaves gave an earthy odor to the room. Beale talked to the students, asking them to imagine how the earth would look if all fallen trees, leaves and dead animals stayed on the ground forever without decaying.

After this imagination lesson, the students went outside, where they observed tiny organisms, then videotaped fungi, dead plants and animals and learned about the ecosystem firsthand.

Beale hopes to add new projects to the lesson, like making a "moldarium" from various food substances such as bread, cheese and fruit and maintaining a classroom compost pile.

Beale did not start out being so at ease with high technology. "I'm terrified of equipment and machines," she says. "I just decided to get gutsy and come in on weekends and nights and learn by trial and error. I gained some independence, and I gained some guts."

Barbara Durrett, also at Cahaba Heights, began by videotaping her students narrating autobiographies, with their choice of background music. Soon they were writing poems about themselves and illustrating them with computer graphics, sending the finished products to pen pals in New York.

"I'm thrilled to see the child who in September didn't pay much attention to grammar now being almost nitpicky because his composition is going to be in print. My students are beginning to think in a more organized manner," says Chiquita Marbury of Hewitt Elementary.

Her project, entitled "The Last Warrior," mushroomed from a simple study of American Indians into a major production in which four classes adopted tribes. They dressed in costumes and staged a powwow with dances, songs and storytelling—all on videotape.

Bethnee Durham of Cahaba Heights found that her kindergarteners were intimidated by a trip to the lunchroom. She turned over the camera to three students and let them videotape the whole procedure, from lining up and getting silverware to paying, eating and putting up the trays. The unexpected result was that the teachers were treated to a kids-eye view of the lunchroom. They were able to see that, from a five-year-old's perspective, it *was* intimidating.

"Kids are raised to be good at passively receiving media," says D'Ignazio. "They don't create it. With these video carts, they see how it's really created. This, hopefully, opens up a new area for kids. Now they've been behind the camera, they've produced a sound track, they've designed a storyboard and

laid out a newsletter. It's teaching these kids thinking skills."

Working as a team, the Cahaba Heights teachers have completed a number of projects with their students, including taping a series of 60-second television spots on Christmas around the world, with costumes and props. They are working on a video yearbook for the school, and Beale has formed a sixth-grade production company entitled "Serpentine Dreams of Children Machine."

"We have operated on a shoestring, but we have tried to create an environment where imaginations are not limited."

The production company began by videotaping Cupcake, the school's pet python, and expanded to taping and interpreting nightmares and fears of children, focusing on spiders, snakes and other subjects of horror. Beale describes the subject matter as "something they just wanted to get out of their systems."

Selesta Meuse teaches orthopedically and health-impaired children at Mount Olive Elementary. She also has coordinated her school's multimedia center as part of her resource room.

"Most of the time, my kids don't get to participate. Now they are getting to do things, and they're seeing they're not all that different."

Meuse has found that she can go out and videotape objects and happenings that her students might not otherwise be able to experience, bringing them back on tape to share in the classroom.

"A big goal of this project is to bring the real world into the classroom," says D'Ignazio. "Trying to filter that world that is so rich and so exciting through a textbook or an occasional speaker is just diluting it too much.

"It's amazing what you can find just in the schoolyard to videotape. Then you can come back, rewind it and show it right away. And it can be saved and reused."

Vasha Rosenblum, a teacher at Leeds Elementary, had been teaching for seven years when she joined the project. "It was time to learn something new," she says. "Teachers are often caught behind what's going on in the real world."

She sees the program as "just the chance for these kids to really be involved through the senses and the local thinking process."

"I have five senses, my feelings and my imagination," says D'Ignazio. "If I'm just reading a dry textbook, how much am I using my God-given abilities to learn about the world?"

The students have become so interested in the project that they have formed media clubs and have toured television stations to learn more. They have become historians, chronicling the daily life and special events of the schools. Using computers, the 13 Alabama schools have formed an electronic link with 13 schools in Saanich, Victoria, British Columbia. They exchange "video letters," lessons and media experiences.

In the process, they are developing positive self-images, says D'Ignazio. "You're used to seeing Stevie Wonder or Ronald Reagan on the television screen, and all of a sudden, you're there—and you're only four years old!"

"The media are often seen as magnets that draw children away from language skills," says Gloria Soloman, principal of Hewitt Elementary.

"We want to use the media to strengthen and stimulate language skills. And it's working. I'm astounded by this project. It's incredible. It's beyond belief what these teachers have done. I have tremendous respect for them. They're very special teachers."

Although D'Ignazio's role as facilitator of the project for the schools is temporary, he hopes the Multimedia Classroom Project will be self-sustaining.

"We have operated on a shoestring, but we have tried to create an environment where imaginations are not limited. The resources are there. Once people see how these things fit together, they can do it themselves and get other schools interested and involved. These schools will become trainer schools and will move beyond themselves."

"We've broken down some barriers and shown these are tools that can be used to make teaching a lot more exciting," says Jones. "If we don't do that in the public schools, we're going to be less attractive to kids. The challenge in public education is to compete for kids' attention. We've reached a point where we can't teach children the way we've been teaching them—by dispensing facts."

One day Joey, Jeff and I went hunting in Dead Man's Forest. We found a house and Joey said, "Let's all go in." I said, "Let's all go in or never go out of the forest." So we went in it and it had spider webs. But we knocked them off. We went in this room. It was strange. I said, "Wow!" There was so much to see. There were keyboards, computer, printers, video cameras and VCRs, and tape recorders. Something scared us and we wanted to leave. But we took the media center with us!"

—Blake Boland
Student
Hewitt
Elementary
(Composed and illustrated on computer.)

Students using the new equipment can turn fellow students' television images (below) into computer-generated art at the touch of a key.

BY SCOTCH GRAY

The Multimedia Classroom: Making It Work (Part 2 of 2)

Last month we introduced the idea of *scrounged multimedia*—creating a multimedia publishing center using hardware and software already available in your school and community. It takes no more than a few basic tools to get started on assembling a complete edit studio!

After you have gathered some equipment and software (computers, VCRs, graphics programs, music or animation software, tape recorders, and other local finds), you're ready to begin experimenting. You may want to start by exploring each medium—audio, video recording, and so forth—individually. (See last month's article.) However, eventually you'll want to make connections between the different media.

The key to such connections is a simple, inexpensive cable. If you're using an older composite monitor, you probably already have such a cable connecting the monitor to your computer. If not, the cable you need (referred to by a variety of names including "RCA cable," "dubbing cable," and "multimedia cable") can be purchased from your local Radio Shack or other electronics supply store for less than $10. While you're at the store, you'll probably want to buy several of these cables and a few inexpensive "adapters" designed to modify the cable ends to fit into the openings on the various machines you'll be using. (A 1/4-inch "phone" adapter, a 1/8-inch phone adapter, and a female-to-female adapter allowing you to connect two multimedia cables together for added length should be all you need.)

In this second article on creating a multimedia publishing center using scrounged and low-cost equipment, we take a closer look at some of the activities and products that have made other multimedia centers a success. (Second of two parts.)

By Fred D'Ignazio

Marrying Computers and Video

One of the easiest and most magical connections you can make is the connection between the computer and the VCR.

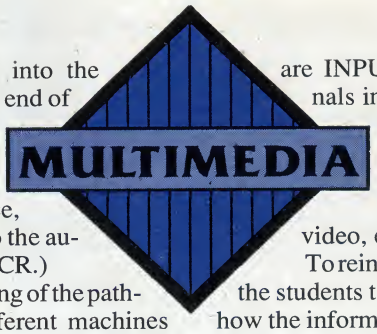
First, unplug the monitor from the computer and run a multimedia cable from the monitor jack on the computer to the VIDEO IN jack on the back of your VCR. Set the VCR for "LINE INPUT" and press the TV/VCR button so that "VCR" is lit up. You will now see your computer image on the television attached to your VCR. If you then place a blank tape in the VCR and press the "RECORD" button (it may be necessary to press "PLAY" at the same time), you can record the computer graphics displayed on the TV screen directly onto videotape.

With the help of your favorite paint program or a specialized package such as Scholastic's *Slide Shop*, Epyx's *Home Video Producer*, or Brøderbund's *VCR Companion*, you can use this same connection to add introductions, titles and credit screens to school-made videotapes. (Note: With most common hardware setups, this process involves *alternating* video and computer screens rather than *combining* them.)

To add narration to computer-generated videos, the simplest approach involves using another multimedia cable (with whichever phone adapter fits) to plug your school's video camera or camcorder into the AUDIO IN jack on the back of your VCR. The microphone on the camera is now directly wired to the VCR. Your students then read their book reports, term papers, and stories aloud in front of the camera's mike at the same time that computer images are being sent to the VCR, and their voices are recorded onto the videotape to accompany any colorful computer graphics they may have created. They can also add a musical soundtrack by playing a keyboard, record player, or tape recorder in the background while a script is being read.

Multimedia Inventors

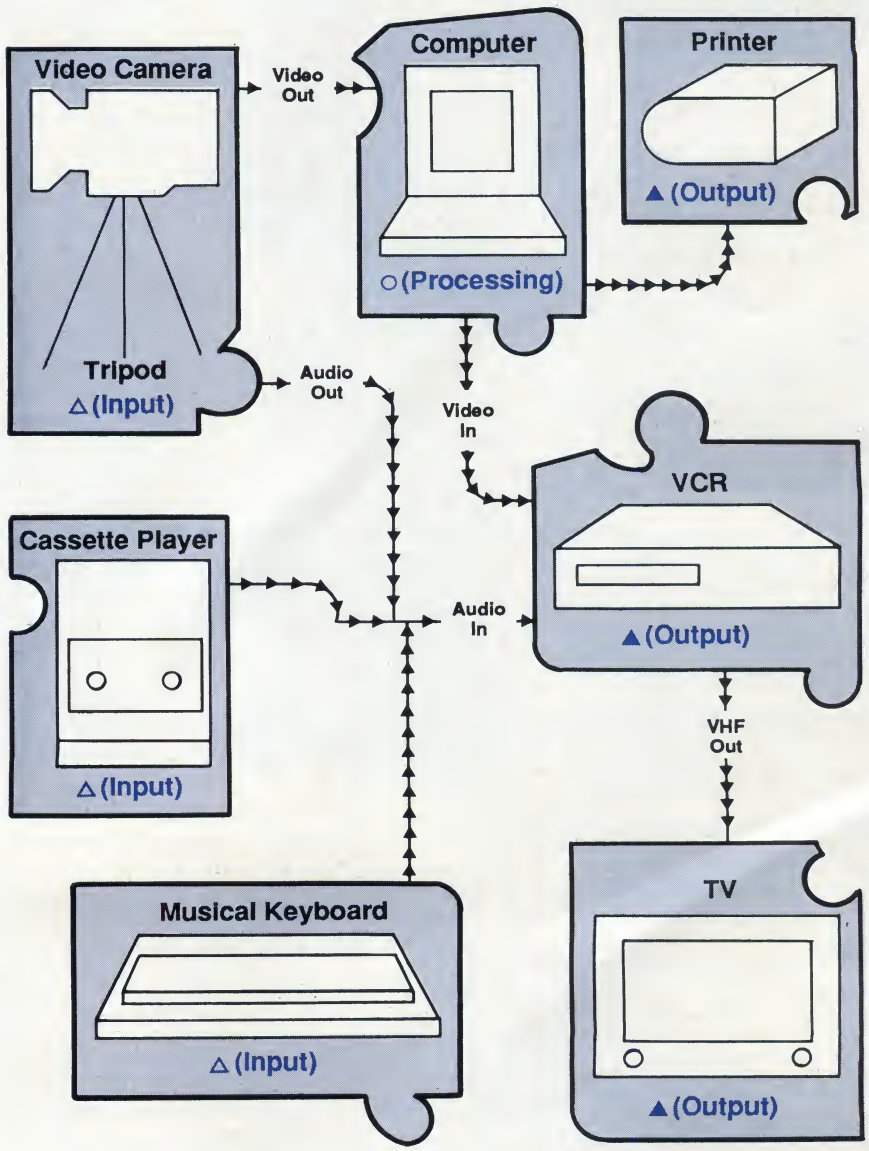
Once your students are familiar with these few basic multimedia connections, they are ready to start inventing their own. A little experimenting, for example, is likely to lead them to another way of creating musical soundtracks and special sound effects: by hooking a musical keyboard, a tape recorder, or a record player *directly* into the VCR. (In this case, one end of the familiar multimedia cable plugs into the audio output or PHONES jack on the sound source, and the other plugs into the audio input jack of the VCR.)



A basic understanding of the pathways between the different machines will help your students dream up logical connections. As they encounter each new device, encourage the students to examine the "jacks" (holes) in the back of the machine and identify which ones are INPUT jacks (bringing signals into a device), which are OUTPUT jacks (carrying signals out of the device), and what sort of signals (e.g., audio, video, etc.) each one accepts.

To reinforce these concepts, ask the students to draw "maps" showing how the information flows between the devices. For example, suggest that they draw diagrams with pathways to show how audio and video signals travel between the computer and the VCR when they are hooked up as suggested earlier.

Mapping Some Possible Connections



Announcing: Productivity and Learning in the Visual Information Age—a forum for leaders in education, government and business.
In response to the goals outlined in the President's Education Summit with Governors, the Interactive Video Industry and Business Week have joined forces to organize a national leadership forum focusing on educational solutions. Scheduled for November 29-30 at Washington, D.C.'s new Techworld Plaza, the forum will showcase innovative learning programs that have used computers, video and telecommunications successfully to address problems facing today's schools. For more information on the forum, contact Marissa Levy, Business Week Executive Programs, 1221 Avenue of the Americas, 36th floor, New York, NY 11020; (800) 848-9018 or (212) 512-4930.

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CIRCLE 45 ON READER INQUIRY CARD

Multimedia Classroom

Arrows or color-coding can be used to distinguish between input and output or to indicate the *media content* (e.g., music, voices, images, text) being sent along a particular pathway. With younger children, it's sometimes helpful to have them *act out* the connections, using pieces of colored yarn to represent the input and output cables.

After diagramming some connections that they know (from experience) will work, your students can move on to mapping some *potential* connections. Have them discuss the most promising ideas and then hook up the devices to test their hypotheses.

Not all of your students' experiments will work, but reassure them that they're not likely to harm the equipment or themselves as they explore. In particular, there is no danger of electrical shock from the multimedia cables that connect one device to another. The electrical signals carrying the images and sounds are quite small, and unlike the devices' power cords (which *do carry high voltages* and should not be experimented with!), the multimedia cables present no hazard to students' safety.

Freeze!

In addition to gathering scrounged materials for your multimedia center, you will want to be on the lookout for some newer products that can be obtained at bargain prices. One of the best bargains in the multimedia world—after the multimedia cables—is a simple video digitizer. This relatively inexpensive device makes a new connection possible: It allows the user to capture a live image (using a video camera as the input device) and output it to the computer screen, printer, or floppy disk.

Here's an example of how one digitizer, Digital Vision's *ComputerEyes*, works. After plugging the *ComputerEyes* circuit card into a slot inside your computer and attaching the digitizer's three cables to the school's video camera, computer, and VCR, student publishers boot up the *ComputerEyes* program disk. Pointing the video camera at an object—a guinea pig, for example—they press the RETURN or ENTER key on the computer. A few seconds later a "freeze-frame" image of the guinea pig appears on the computer monitor. *The guinea pig has just become part of multimedia history!* The students have transformed the little creature's live video image into a digital computer image which can be shrunk, enlarged, inverted, scrolled, colorized, and stored on a computer disk.

Once it's been captured, the digitized image can be sent to the VCR through the *ComputerEyes* cable and recorded onto blank videotape. In this way, students can add freeze frames to other video segments, creating dramatic effect. (Such freeze frames often appear at the end of movies or commercials: The action freezes just as a couple embraces or an athlete achieves an incredible feat; the image then remains on the screen as music is played or credits scroll upward.)

Still images captured with a digitizer can be used in other ways as well. With Scholastic's *Slide Shop*, for example, a *ComputerEyes* image can be "imported" as a graphics background for a single slide. *Slide Shop* then lets you "decorate" the video image with a border and colorful clip art. You can also add captions, titles, and credits, and insert a music or sound effects clip to accompany the slide. Finally, you can link the slide with other slides into a presentation that features animation and special effects.

Once such a slide show is complete, student authors have various publishing options. They can publish *live* by giving an oral report backed up by their computerized slide show. They can publish on *paper* by printing out the slide show screens and pasting them into a book, which they assemble themselves. They can publish in *video* by sending the entire slide show from the computer to the VCR and recording it on a blank videotape. Or they can publish on *computer* by creating a self-booting "show disk" which runs unattended.

Video Overlay

As video overlay cards have started to appear for an increasing number of computers, a whole new world of possibilities has opened up for young multimedia producers. A video overlay card is a board that plugs into the motherboard of the computer and makes it possible to combine video input (from a video source such as a video camera, VCR, or videodisc player) with computer-generated graphics *on the same screen*. Essentially the video signal has two layers: The bottom layer is a video image; the top layer is computer text or graphics.

To understand video overlay better,

imagine sitting in front of a TV set while you hold a piece of orange construction paper between you and the monitor. The TV picture represents the video layer; the paper represents the computer graphics layer. You can't see the picture on the TV because of the paper. However, if you take a pair of scissors and cut a square hole in the middle of the paper, you can see the TV picture through the hole. What's more, the picture is nicely framed with an orange border.

When you look at a computer video overlay, the effect is the same. If you begin with a screen filled with orange, you cannot see the video picture underneath. However, you can designate another color (usually black) as the "video key color"—an "invisible" color that lets the underlying video picture show through. If you draw a box on the orange screen and fill it in with the key color, you can see the video image framed with an orange border.

Students can use such "windowing" effects in a variety of ways to enhance their video productions. Windows can be small or large; they can be square, oval, or any other shape the student chooses. The printed background or border need not be a single solid color; students can create detailed backdrops (with a graphics program, or by using a video digitizer to capture a video image and save it as a computer graphic) and insert small windows through which videotaped actors appear. (In this way, it's possible to place a student in a fictional setting—on the moon, in a fantasy land, and so on—without creating and filming elaborate sets and props.)

It's also possible to place several video windows on different parts of the screen or to start with the entire screen in the transparent key color and then use a paint or titling program to superimpose credits, labels, or other graphic elements in non-key colors.

Next Steps

Depending on your school's resources and the types of computers you use, there may be other multimedia tools available to you as well. If your school owns Macintosh computers, for example, you will have access to *HyperCard;* if you have IBM computers, *LinkWay* is an appealing option. Similar multimedia/hypermedia authoring tools are becoming available for other machines as well and may be worth purchasing for your publishing center.

Other multimedia gadgets that are gaining popularity include audio digitizers (useful for computers that have sound playback capabilities and sufficient memory), videodisc players, scanners, frame grabbers (which can digitize individual frames from moving video or computer images), CD-ROM players, and a host of new MIDI musical devices. You will be reading more about these newer technologies and their applications in future issues of *Classroom Computer Learning.*

The People Connection

In a multimedia classroom, no one needs to know everything. And every person can make a contribution. Many teachers manage multimedia by creating student teams that specialize in different parts of the multimedia process. Here are some teams which teachers have created: brainstormers, researchers, writers, producers, reporters, musicians, camera whizzes, print magicians, and slide producers. The equipment in a multimedia center can be used together, but it is usually divided up for use by different specialist teams. For example, the musicians get the musical keyboard, the reporters get the video camera, and the print magicians get the computer and printer.

Good organization also helps deal with the problems of limited time and scarce resources. Many smart teachers have realized that much of the multimedia thinking, collaborating, writing, and researching can be done *before the multimedia equipment ever arrives.* The key is to view multimedia publishing as an *add-on* to current classroom activities and not as a replacement.

Multimedia offers great potential to educators at all grade levels. It can help bring even the driest areas of curriculum to life and turn the classroom into an exciting, studio-like arena. One technology expert referred to the 1990s as the "Multimedia Decade." That means that we have many years to learn and grow. But now is the time to get started! ■

Fred D'Ignazio is President of Multi-Media Classrooms, Inc. (1302 Beech St., East Lansing, MI 48823; (517) 337-1549). He conducts teaches workshops all over the U.S. and Canada, and is a national leader in the areas of multimedia, merging technologies, and cooperative learning.

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CIRCLE 27 ON READER INQUIRY CARD

"Malfunction! Malfunction!"

© 1983 by Jack Ziegler

to know about a computer, you will need to ask what it can do and what programs it can run, not how it works. **Ken Uston's Guide to Home Computers** (Signet, $3.50) has been written to help you find out what you need to find out. It cuts through most of the unnecessary jargon surrounding computers and directs you to those terms that you'll need to know in order to find the right computer and programs to do your job.

The book is divided into two major sections. The first discusses a wide range of computer software (programs) for home users. Each program is described quite thoroughly and Uston is careful to point out any positive or negative features that he feels might affect the useability of the program.

In the second part of this book Uston describes 18 of the more popular personal computers. These are covered with the same attention to detail as were the programs in the previous section. The computers range in price from the least expensive computer (TIMEX/SINCLAIR) to the most expensive computer (IBM PC) currently available for the home computerist.

Overall, this book is an excellent guide to purchasing a first computer, but if you use it, you should beware of those sections headed "You Should Buy One IF" and "You Should Not Buy One IF." These are basically opinions and for every computer user who agrees with Uston, there are certainly as many who would disagree.

While the pressure for an individual to buy a computer is high today, the pressure on businesses is even higher. The cost of doing business is going up each day, and the companies that will survive are the ones that are able to make the best use of their resources, and in this, computers are playing a key role. The trouble is, that although the potential gains obtained through computerizing are greater for a company than an individual, the potential losses are greater as well.

To avoid the more common pitfalls and make the transition to computerization a smoother one, **How to Buy (and Survive) Your First Computer** (Byte Books, $14.95) by Carolee Nance Kolve provides some excellent guidelines on how to plan for and select a business computer. The book is well organized and provides solid advice which can prove to be very useful in:

—determining if your company is ready to computerize.

—deciding what kind of computer would be best for your application.

—selecting software; choosing a computer vendor and,

—introducing (CONTINUED ON PAGE 10)

"Most of the applications a typical user will need are readily available as existing programs that can be run on the computer without any knowledge of programming. . . . To find out what you need to know about a computer, you will need to ask what it can do and what programs it can run, not how it works."

Kids, Parents And Software

By FRED D'IGNAZIO

KIDS AND COMPUTERS!

The words roll off the tongue so easily. Kids and computers—they seem so natural together. At least that's what we think now. But this hasn't always been the case. In fact, it wasn't the case as recently as nine years ago. In 1974 if someone had told you that he thought computers were the natural toys and tools of children, you probably would have laughed in his face. "Preposterous!" you would have thought. "I don't understand computers, so how could my kids expect to understand them?"

But, as we know now, computers and kids are a match made in heaven. Still, they are a match that had to wait for the first home computers to appear.

The first home computer appeared in January 1975. That's when parents and teachers began bringing children and computers together. But some of us jumped the gun. We were already in schools showing kids how to operate big, mainframe computers and teaching them how to program.

Back in 1974, I was a programmer working on a mammoth Honeywell 6000 computer in the basement of the Pentagon, coding and decoding top-secret military systems. I guess it's safe now to admit what I was doing. My job was to program the computer to send soldiers' socks and underwear to Army bases all over the world.

Programming soldiers' underwear and socks is a more demanding job than you might imagine. One day I decided to call it quits, and I picked up a briefcase-size computer terminal and smuggled it out of the Pentagon. I took a city bus over the Potomac River and ended up in a mid-town elementary school. I hooked up the terminal, via a telephone, to a giant computer in Chicago. I spent the entire day, with the teacher's permission, teaching 5-, 6-, and 7-year-olds how to program and play computer games. It was one of the most exhilarating experiences of my life. After Snurkle and Hunt the Wumpus, it was hard to go back to socks and underwear.

The following year (1975), the first personal computer appeared—the Altair computer from the MITS Corporation in Albuquerque, New Mexico. And my daughter was born. I became fascinated with the idea of a personal-computer for a little kid (a very little kid—Catie was only a month old at the time.) My wife suggested that the book would be most successful if it were a picturebook adventure story like *Alice in Wonderland*.

I began the project immediately. But writing a book and (CONTINUED ON PAGE 8)

FRED D'IGNAZIO, associate editor of *Compute!* magazine, reports regularly on family computing. He is the author of 15 books about computers and robots.

Kids, Parents and Software

(CONTINUED FROM PAGE 7)

getting it published was a much harder task than I imagined. The book, **Katie and the Computer** (Creative Computing Press, $8.95, illustrated by Stan Gilliam), didn't appear until Catie's fourth birthday in 1979. (Since then, *Katie* has gone into six printings and is evolving into a series.)

Between 1979 and 1982, only a few new children's computer books appeared. Then, suddenly, the home-computer market exploded. By 1982, home computers could be bought for less than $200 apiece, then for less than $100 apiece. Before the end of 1983 there may be as many as 5 million computers in people's homes; and by the end of 1990, anywhere from 16 million to 38 million. Experts estimate that, in these homes, as many as 6 million to 8 million children are already using the computers. These children, and their parents, need books, and publishers are responding with dozens of titles. Here are some of the best books now available:

Computer Literacy for Parents

Mindstorms, by Seymour Papert (Basic Books, $12.95; paperback, $6.65). Papert's book on "children, computers, and powerful ideas" is already a classic. It is a delight to read. It is also the most humane, down to earth, and insightful guide on teaching children by using computers. And it is an armchair introduction to the children's computer language, Logo, which Papert helped to develop.

Reading and Understanding, by Roger C. Schank (Lawrence Erlbaum Associates, $19.95; paperback, $8.95). Schank is head of the department of computer science at Yale University and one of the leaders in the field of Artificial Intelligence. Papert focused primarily on learning math and science by using computers. Schank emphasizes language arts.

Parent's Guide to Computers in Education by David Moursund (International Council for Computers in Education, 135 Education, University of Oregon, Eugene, Oregon 97403, $3.50). Moursund is one of the leading figures in computer education for children. His little book (80 pages) is inexpensive, easy to read, and full of wise advice for parents.

A Parent's Guide to Personal Computers and Software by the editors of Consumer Guide (Touchstone/Simon & Schuster, $6.95). This is another inexpensive, short (64 pages), and easy to read book. It is comprehensive and full of detailed, practical, and up-to-date information.

Kids and Computers by Eugene Galanter (Putnam/Perigee, $7.95). The subtitle of this book is "The Parents' Microcomputer Handbook." Galanter is a pioneer in teaching children about computers. This book is a well written and thorough guide. It has several chapters that help families get started programming in the BASIC computer language.

Microcomputers: A Parents' Guide, by Kenneth P. Goldberg and Robert D. Sherwood (Wiley, $8.95). A very comprehensive book. Goldberg and Sherwood teach parents how to be well-informed, discerning consumers

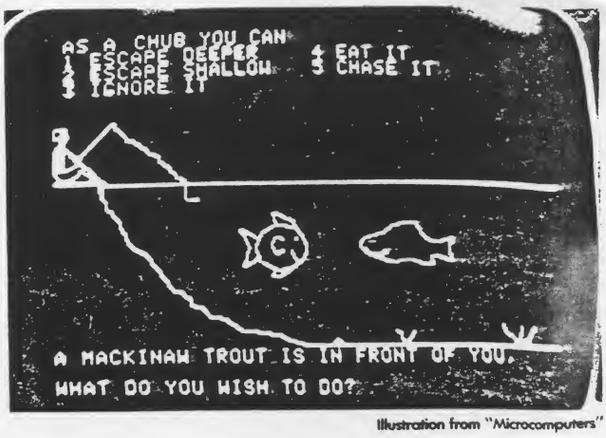

Illustration from "Microcomputers"

of home computers and software. They describe and highlight the important link between computing at home and computing at school. They compare all the major home computers and furnish lots of sample programs for the parent to examine and browse through.

Learning Disabled Students and Computers, by Merrianne Metzger, David Ouelette, and Joan Thormann (International Council for Computers in Education, $2.50). A uniquely helpful book. There are chapters on theory, concerns and misconceptions, software and hardware, and references.

The Computer Camp Book, by The Yellow Springs Computer Camp, Inc. (Yellow Springs Computer Camp, P.O. Box 292, Yellow Springs, Ohio 45387, $12.95). This is an omnibus reference book for all parents wondering which computer camp to send their child to next summer. It is also for parents who are wondering whether it is worthwhile to send their child at all.

Children's Computer Literacy Books

I have a secret to tell you: Children's books about computers aren't just for kids. They're for adults, too. Especially if you're just beginning. And especially if you have younger children. The books are written in over-sized type, and have lots of cartoons, humor, and color. And, best of all, the author doesn't rush you. You can read each book with your children and pretend that it's for their benefit. But you'll be learning just as much as they are. You won't feel any pain, and you will probably have just as much fun as your kids.

I know of five computer-literacy (introductory, non-programming) books that are suitable for preschoolers and early primary-school children: besides my own Katie books and Elizabeth Wall's **Computer Alphabet** (Bayshore Books, $8.95), I suggest **QWERTY's Alphabet Adventure** and **QWERTY's Number Adventure** by Shadow Lawn Press (Hayden, $14.95 apiece—price includes the book and a cassette that will run on an Atari, TI 99/4A, VIC, or Commodore 64; or a disk that will run on the Apple).

The QWERTY books are especially nice because they are meant to be used along with a computer. At bedtime the child is sitting in her parent's lap while the parent reads her a bedtime story. In front of them is their home

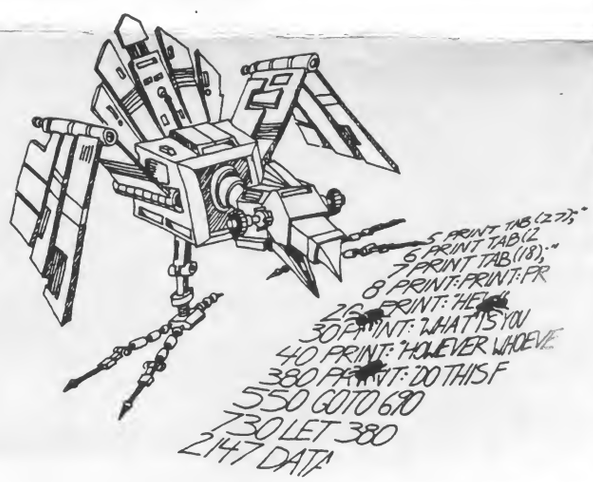

Illustration from "Kids and the Apple"

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computer with a bright, colorful storybook picture on the display screen. At the end of each page, the child leans forward and presses the Return button on the computer to call a new storybook picture. And, while the parent is reading the book, the child is pressing buttons on the computer keyboard, busily learning numbers, shapes, and the letters in the alphabet.

For slightly older children (ages 5-11) there are already a number of good computer-literacy books, including:

Every Kid's First Book of Computers and Robots by David Thornton (Compute! Books, $4.95).

The First Look Book Series. Three computer-literacy volumes: *Sizes, Shapes and Flavors, Beeps, Whirs and Blinking Lights, Menus, Loops and Mice* (Dell, $2.95 each).

Understanding the Micro, by Judy Tatchell and Bill Bennett (Usborne Guide/Hayes, paperback, $4.95)

The Star Wars Question and Answer Book About Computers, by Fred D'Ignazio (Random House, $4.95).

All the above books have lots of colorful photos and cartoons set in large, readable type, and are up-to-date guides to the world of small computers.

There are also plenty of good computer-literacy guides for older children (ages 10-14). For example:

Microcomputers Can Be Kid Stuff, by Anna Mae Walsh Burke (Hayden, $11.95).

Computer Basics, by Hal Hellman (Prentice-Hall, $8.95).

The Creative Kid's Guide to Home Computers, by Fred D'Ignazio (Doubleday, $9.95).

A Dictionary of Computer Words, by Robert W. Bly (Dell/Banbury, $3.95).

Basic Guides for Parents and Children

Programming guides are most helpful if they are written for your brand of home computer. If you have an Apple, try to find books written for the Apple. Likewise if you have a Commodore 64, an Atari, a TI 99/4A, or whatever. Each computer is a little bit different, and each manufacturer's version of the BASIC computer language is slightly different—especially the most appealing commands, the ones that make pictures, sound efects, and music.

There are three wonderful exceptions to this rule. First **The Usborne Introduction to Computer Programming** (Usborne/Hayes Books, $12.95; paperback, $5.95). The Usborne Guide is unique. It is a humorous, colorful, imaginative introduction to computer programming in BASIC, but you don't even need a computer. It's a great book for you and your kids to read *before* you buy a home computer.

Next, there are the two very popular books, **Basic Fun** and **Basic Beginnings,** by Susan Drake Lipscomb and Margaret Ann Zuanich (Avon/Camelot, $2.25 each). The books are collections of dozens of short programs for children and their parents to type into their computer. The programs are of all sorts and come with names like KNOCK KNOCK, Flag, Baby Sister, Paper Route, Pizza, You Are a Detective, and The Great Magician. They consist of a few simple BASIC commands and have no sound effects or pictures, so they will work (with, perhaps, one of two changes) on all the popular computers.

If you have children ages 5-10 and you already own one of the popular home computers (the Apple, Atari, TI 99/4A, IBM, or Commodore VIC-20 or 64), there are two excellent books that kids can read themselves. The books come in several versions, one for each brand of computer. You should get both books: **Computers for Kids** by Sally Larsen (Creative Computing, $3.95) and **Computer Playground** by M. J. Winter (Datamost, $9.95). Both books are written in extra-large type and have plenty of illustrations (the

(CONTINUED ON NEXT PAGE)

late it, and he needs to learn how to construct algorithms that work. The challenge comes in finding a way to explain these things that is not bafflingly abstract. Most people need to have programming introduced with a common-

JAMES G. WHEELER heads the system development department at STSC Inc., a Washington software firm.

of technical communication and it must t
plain English simply lacks the vocabulary
new and abstract terrain of computing. **Th**
dia of Computer Terms by Douglas
ron's, $6.95) is one of several guides to
ance now in print. Many definitions are a
brief explanations written in nontechnica

Kids and Software

(CONTINUED FROM PAGE 8)

illustrations in Winter's book are colorful and especially imaginative and appealing to young children). Larsen's book is an introduction to programming in BASIC. Winter's is a wonderful collection of programs that are sure to interest children.

What if your family has a ZX81 or TS1000 computer? Then I recommend you buy Linda Hurley's **ZX81/TS1000 Programming for Young Programmers** (McGraw-Hill/Byte Books, $9.95). You and your kids should read Hurley's book together. When you're done, the whole family will know how to operate the computer and write madcap programs like Spiders in the Dark, Bonk, Owl Scoop, and Gotcha.

If you have older children (ages 10 to 14), I recommend another Datamost series: **Kids and the Blankety-Blank Computer** by Edward H. Carlson (Datamost, $19.95). The word "blankety-blank" is my own invention and is not in the title. If you and your family have a Commodore 64, look for the book entitled *Kids and the Commodore 64 Computer*. The books are imaginative, extremely thorough, and very, very readable.

Computer Fiction for Kids

We are entering a new era in children's books —an era of interactive fiction intimately linked to home computers. The child becomes an actor in the story and she gets to help determine its outcome.

Time Lost by Joseph C. Giarratano, Kris Austen Andrews, and Arlan Keith Andrews Sr. (Que Corporation, 7960 Castleway Dr., Indianapolis, Ind. 46250, $6.95). There are separate versions of the book for the TI 99/4A, TS 1000, Atari, and Vic 20. The front end of the book is a comic-book adventure. The back end consists of six programs that your child can type into the computer and play while reading the book.

Science Fiction Computer Storybook and **Mystery and Adventure Storybook,** both by Stuart and Donna Paltrowitz (Tribeca Communications, $4.95 each).

Murder in the Mansion, by Jim Cole (ARCsoft, $6.95). Cole's book is a potpourri of adventure-game programs (or, if you will, "participatory novels") written in Pocket-BASIC for the TRS-80 Pocket Computer.

If you and your family get tired typing in other people's mysteries and adventures, then you should consider inventing your own. One book that can help you get started is Frank Dacosta's **Writing BASIC Adventure Programs for the TRS-80** (TAB Books, $9.95). Dacosta wrote the book in TRS-80 BASIC, but many of the programs and all of the ideas can easily be adapted to run on other popular home computers. □

FAMILY FARE ANIMATION & ADVENTURE...FOR THE WHOLE FAMILY

Editor's Note: Fred D'Ignazio is a contributing editor to Video Movies. *He has also written a number of computer books for children and appears as a regular commentator on ABC TV's "Good Morning America." He will be writing reviews and essays for* Family Fare.

The New Dark Stories

When my children were younger, I'd put them to bed each night by turning off the lights and telling them a *dark story*. Dark stories were tales I made up myself with my children cast as the hero and heroine. Later, as the children got older, they seemed less interested in listening to my dark stories. The stories that seemed suitable for Catie (eight) just didn't seem interesting to Eric (five).

I was feeling sad about not being able to tell those stories anymore, and felt something was missing from our nighttime rituals. TV didn't work because I didn't like most of the programs that were on before my children's bedtime at 8:30 pm.

That's when we purchased a VCR and began watching movies together. The movies have become like new dark stories for our family. We watch them in the dark, and the kids use Janet (their mother) and me as pillows to cuddle up to while we all watch together. We usually end up tickling someone's back, leg, or arm before the movie is over. All in all, it's become a very pleasurable, intimate family experience that's even better than the old dark stories because Janet joins in too.

When my family and I watch video movies we are having fun together, but we're also doing something else that's important—replenishing our imaginations. I think of an individual's imagination as a well of cool, crystal pure water that can easily run dry unless new springs frequently refill it. One of the ways to replenish the imagination's well is by having rich experiences. Another way is to read good books or to listen to music. I think a third good way is to watch movies. Movies send me and my family to faraway times and places. We get to meet people we have never met before, see sights we have never seen, and hear sounds we have never heard.

When we watch movies we're thrust into dramatic situations that make us feel strong emotions. I think we—as human beings—are like a fine instrument capable of a broad range of emotions. As the emotions are felt, the instrument is played. Collecting these emotional experiences through books, music, or movies helps tune the instrument.

The movies we've seen in the last month have had a profound effect on my five-year-old, Eric. Several times a day he's either asked questions about a character in a movie, sung a song picked up from one of the movies, or playacted a character's role that he's seen. Since young children haven't yet had the opportunity to travel broadly, or experience many aspects of life, movies let them vicariously share in these experiences. In this way my children can travel to places they might otherwise never go, and meet people and creatures they may never meet in real life.

Even the youngest children can benefit from movies. New studies are confirming that young children feel a broad range of emotion even before the age of four, and they are more outward-oriented and caring than was once thought. I know Eric is experiencing the movies deeply. I have seen him cry over movies like *E.T., Charlotte's Web,* and *Ringing Bell* (reviewed in last month's issue). I believe that good movies are like exercises for Eric's imagination and emotions. Experiencing movies helps them become stronger, more balanced, and more developed. And watching video movies with my children allows me to share in that process.

—FRED D'IGNAZIO

◄Dishonest John. Beany & Cecil.►

Beany & Cecil

VOLUMES I AND II
(1961-1963), C, *Animated.* **RCA/Columbia, $29.95.**

If any cartoon is a reflection of its time, it's *Beany & Cecil.* When future historians unearth these cartoons, they'll get some sense of what was going on in the U.S. during the late 1950s and early 1960s, at least as seen through the eyes of zany cartoonist Bob Clampett. The image of America that emerges from these cartoons is similar to the image seen in the reflection of a funhouse mirror. We recognize ourselves in the mirror, but we look silly and stretched out of shape.

When I was growing up (during this same era), I read newspaper stories about UFOs and aliens invading the earth. I played cowboys and indians, read *Superman* and *Davy Crockett* comic books, and watched my heroes and villains on television. I went to the theater and saw movies about robots and evil computers. I watched Jackie Gleason on TV and I watched the astronauts taking off from Cape Canaveral (and dreamt about the day America would finally send a man to the moon). I was also fascinated with the ragged, weird-looking beatniks that started crawling out of basements and bars in Greenwich village.

All these characters and motifs are chronicled in *Beany & Cecil* cartoons. I see them all, once again, when I gaze into Bob Clampett's wacky funhouse mirror. The cartoons are about the adventures of Beany, a fearless, blond-haired kid and Cecil the "seasick sea serpent," who looks more like a cute sock puppet with a button nose than a sea serpent.

Beany and Cecil go on their adventures in an old boat called the *Leakin' Lena,* accompanied by black-bearded Uncle Captain and a crow that keeps following them from the ship's crow's nest. The adventurers sail around the world looking for danger, fame, and fortune. When they go on dry land, the *Leakin' Lena* converts into a prairie schooner that Cecil pulls.

Each tape (Volume I and Volume II) contains six episodes. In "Spots of the Leopard," Beany and Cecil go on a jungle safari to capture a leopard. In "Invasion of the Earth by Robots," "Little Ace from Outer Space," "Strange Objects," and "A Trip to the Schmoon" astronauts, aliens, robots, and outer space prevail. Beatniks are transformed into "The Wildmen of Wildsville," and Davy Crockett becomes "Davy Cricket." Jackie Gleason makes an appearance in "A Trip to the Schmoon," and Walter Brennan (of TV's "The Real McCoys") appears as Pop Gun, an ornery, old Indian fighter.

My children liked *Beany & Cecil* because of the cartoons' nonstop action, the suspense, and the silly rhyming (for example, the robot mother in "Invasion" is Venus the Meanest and her robot son is a menace named Venice). And they also liked the battle in each episode between good and evil. In most episodes evil appeared in the person of Dishonest John, who charmed my children by constantly chuckling, "Nyah, Ah, Ah!" As bad as John is, and as fiendish as his plots are, when he gets laid up in the hospital (in "Grime Doesn't Pay" and "Strange Objects"), Beany, Cecil, and Uncle Captain pay him a visit and bring flowers.

As an adult, I have to admit that I could not sit through more than one or two repeat performances of these cartoons. But there are some rewards. If you like puns, you're in for a treat. Clampett's puns are everywhere and outrageous. One of the episode titles, for example, is "The Capture of Tear-Along the Dotted Lion," a story about a lion bodybuilder who runs a "jungle gym" for muscle beech trees. To get to the Vitamin Pill Hill where the lion works out, Beany, Cecil, and friends have to sail through the Sandwich Isles (that look like baloney sandwiches), Thousand Islands Dressing (literally), and the Vitamin Sea.

Don't buy these cartoons expecting your kids to learn anything. They're fantasy: Rockets are launched by robot hands that squeeze the spaceships out of a giant banana peel. But they'll make you laugh, and younger children (ages three to eight) will want to see them over and over again.

—FRED D'IGNAZIO

King Arthur and the Knights of the Round Table.

King Arthur and the Knights of the Round Table

VOLUMES I AND II.
(1981), C, *Animated.* **60 min.** *G.* Family Home Entertainment, **$49.95.**

After only a couple minutes of watching *King Arthur and the Knights of the Round Table,* I was hooked, along with my eight-year-old daughter. The story is about how Arthur became ruler of Camelot and king of England. It begins with the nighttime murder of Arthur's father and Arthur's narrow escape, and ends (in Volume II) with Arthur at the height of his power, monarch of Britain, surrounded by the faithful knights of the round table.

I liked this tale even though the animation is a bit wooden and the characters are handled with a heavy, humorless hand that at times makes it seem like watching a soap opera. Its redeeming grace is the dramatic and powerful mythic story. The forces of evil are active and nearly overwhelming from the moment the tale begins, and it takes all the courage, cleverness, and might Arthur and his allies can muster to combat them.

This movie is too heavy and serious for younger children. It left my five-year-old restless and bored, but it captured the interest of my eight-year-old daughter.

—FD

Nutcracker Fantasy

(1981), C, *Animated.* RCA/Columbia, **$39.95.**

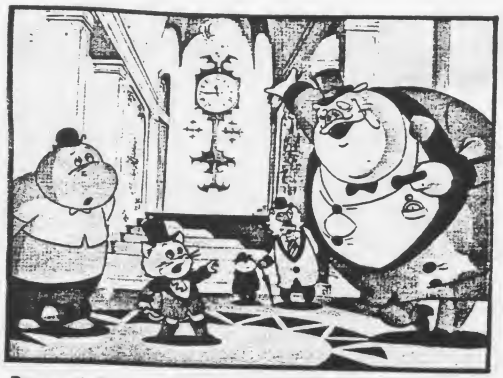
If you are having trouble getting your children to bed on time at night, you might want to show them this movie. At night, after all the good children have already gone to sleep, an evil Rag Man comes out, prowling the streets of the city, searching for bad children who are still awake. When he finds children, he touches them with his fearful, magic wand and turns them into mice. Then he captures them and carries them away.

Nutcracker Fantasy.

This is a masterful puppet musical, based on Peter Ilich Tchaikovsky's ballet music and on E.T.A. Hoffman's *The Nutcracker and the Mouseking* (a tale of a heroic prince who rescues a beautiful, sleeping princess from wicked mice). Michele Lee narrates, Roddy McDowell is the voice of the prince, and Melissa Gilbert is the voice of Clara, a young girl who dreams of the princess.

The puppets are elaborately sculpted and manipulated in a fluid, lifelike manner. The music and the scenes are hauntingly beautiful. This is the best puppet movie my children and I have seen.

—FD



Puss 'n' Boots.

Puss 'n' Boots Travels Around the World

(1982), C, *Animated.* **RCA/Columbia, $29.95.**

Puss is just a humble waiter when the story begins. Sir Rumple Hog, the wealthiest animal in the city, comes to Puss' restaurant and brags that no one can go around the world any faster than he and it took *him* a year. Puss claims that he can make it around the world in just 80 days. Sir Rumple Hog bets his entire fortune that Puss cannot do it.

Puss and his friends outfit a ship and sail off from the city on their journey. They are pursued by three cats who wish to kill Puss because he has befriended mice, and, in their eyes has become a traitor to all cats. Also, Puss must be on guard against a fiendish agent of Sir Rumple Hog who tries to waylay Puss.

This is a marvelous movie even though the script is a little weak (it focuses mainly on running and chasing). Everything else is superb, in particular the visual quality of the animation. The places Puss and his friends visit are beautifully drawn and colored. The scenes are fresh, detailed, textured, and arresting. There are lots of special touches, like the way the sunlight softly bathes the Leaning Tower of Pisa. And the perspectives throughout the movie make you giddy —spires that leap into the sky, and sand dunes in the desert that are impossibly steep. The sharp angles and three-dimensional perspectives increase the drama of both the quest and the pursuit, and they make the viewer feel like he or she is on a roller coaster ride.

—FD

The Red Balloon

(1956), C, *Director:* **Albert Lamorisse. 34 min. Embassy, $39.95.**

This classic children's film tells the story of a small boy and the red balloon that becomes his best friend. How can a balloon be a boy's best friend? As this film demonstrates, anything is possible in a child's imagination.

The story begins realistically; the boy climbs up a lamp post to retrieve a stray balloon. From here we move into the world of poetic fantasy as the relationship of the child to the balloon evolves from one of ownership to one of friendship. The boy's love endows the balloon with animate qualities as it attaches itself to the boy, following him with devotion and free will.

The Red Balloon makes magic of the commonplace—something that children do every day of their lives. But this world of innocence is not without its villains. The "bad" boys want to steal the red balloon. The villains succeed in destroying the red balloon, but out of that destruction rises a dream more beautiful than the original; the child is lifted up into the blue sky by a host of colorful balloons.

Color is used effectively and symbolically in this film. Often the red balloon is the only patch of color against a gray, drab landscape. The story is told without narration or dialogue, and can be enjoyed and understood by even the youngest child. This is a story parents will enjoy watching too.

—MS

1001 Arabian Nights

(1958), C, *Animated.* **RCA/Columbia, $39.95.**

The star of this cartoon adventure is the nearsighted Mr. Magoo. In this story Magoo (with the voice of Jim Backus) is known as "Azziz" Magoo, an honest but half-blind lamp dealer in the city of Baghdad. Magoo's nephew, Aladdin, falls in love with the beautiful princess Yasminda, but finds that she is betrothed to the Wicked Wazir, a sleazy character with a wrinkled mustache and a long, pointed nose. Aladdin tries to win Yasminda away from the Wazir. The Wazir tries to thwart Aladdin, and Magoo manages to bumble his way good-naturedly through it all.

There is nothing extraordinary about this film. On the contrary, the animation, the characters, and the script are all very ordinary. But somehow the movie succeeds. Aladdin and Magoo are lovable and the big surprise is the genie of Aladdin's lamp. He's like no genie you or your children have ever seen.

—FD

White Mane.

White Mane

(1952), B/W, *Director:* **Albert Lamorisse. 38 min. Embassy, $29.95.**

This is an earlier film by the director of *The Red Balloon.* The story takes place in the marsh lands at the mouth of the Rhone River in the south of France. A beautiful white stallion named White Mane leads a herd of wild horses. The ranchers of the land long to possess White Mane (the herd's leader) as does a young boy named Falco. It seems to be a recurrent theme in Albert Lamorisse's films that men cannot abide beautiful things that run free. They must be captured and contained even if it means their destruction. The young Falco is not immune to this desire to possess, but at least his longing for the horse stems from love and friendship.

Actually, this theme is not uncommon in children's films. Perhaps it is because children need to learn that they cannot possess everything they desire or admire. However, be prepared for the fact that this film may make your child want a horse.

Technically, *White Mane* is a lovely film; it's beautifully photographed in black and white, and is an aesthetic delight. Unfortunately, the film is probably too slowly paced for today's child.

—MS

Family Fare *was written by Fred D'Ignazio (FD) and Maria Sosa (MS).*

Entertainment Tomorrow

by Allen L. Wold and Fred D'Ignazio

SoftSide welcomes Fred D'Ignazio and Allen L. Wold whose Entertainment Tomorrow column will appear each month.

Fred D'Ignazio is a computer enthusiast and author of several books on computers for young people, including: The Creative Kid's Guide to Home Computers; Katie and the Computer; *and* Small Computers: Exploring Their Technology and Future. *He is presently writing a series of books on how to create graphics-and-sound adventure games on the Apple, Atari, Commodore VIC, and TRS-80® Color Computer.*

Allen L. Wold is a science-fiction writer with two published novels, The Planet Masters *and* Star God, *and a dozen or so others in various stages of conception or revision. Wold is a long-time devotee of role-playing games and other forms of gaming.*

D'Ignazio and Wold do their writing on word processors. Both see the computer not just as a tool or toy, but as a force that is profoundly shaping our lives. Both are optimistic about future computer applications and believe in the value of bold speculation about computers and their impact on our lives.

Computerized games and recreation are becoming more common, more complex, and more sophisticated all the time. For an admittedly biased example, we can take a look at the November/December (1981) issue of *Games* magazine in which the editors list their 100 favorite games. Twenty-six of these are electronic, including one construction set, one robot tank, five hand-held action games, four home video systems, and six board games. Among the "top" games were computerized chess and backgammon, computerized bridge, computerized *Dungeons and Dragons* (Mattel), a fascinating computer-moderated board game called *Dark Tower* (Milton Bradley), and a version of the old *Jungle Game* (once called *Stratego*) but now called *The Generals* (Ideal).

In last year's list of favorites, there were 23 electronic games. The games, though almost as numerous, were less complex and less flexible than the current crop (most of them were designed to play only one limited game). This year there are many "multi-game" games, and those which do only only thing have become more sophisticated. For example, a grand prix auto race game features impressive 3-D graphics on a liquid crystal display (LCD). Another game challenges you to escape from 1000 mazes and displays each maze in a 3-D prisoner's-eye view from *inside the maze.*

Games of this sort are only a small part of the far larger field of electronic and computerized recreation, but they indicate a massive trend. Let's take an extreme example, to see where this trend might lead us.

Some time in the not too distant future, when you telecommute home from a hard day's work and want a little recreation, it might go like this:

You leave your work terminal in your study and wander into your family "media" room and flop down in a comfortable chair. You put on something that looks like a cross between a football helmet and a welder's mask. It is very lightweight and consists of a wrap-around video screen, earphones, microphone, and a tiny, extremely short-range radio. That radio links the microchip computer implanted in your skull to the super-fast computer that dwells in distributed nodes inside the walls of your home.

(The information wiring diagram of your home looks like a sketch of the neural nets and clusters of ganglia that make up the human brain. In a sense, your house is a brain, and you are a mobile information node that migrates around the brain's interior.)

With the helmet in place, you are now in a direct link with your computer system, which in turn is linked to every other computer in the world via laser-microwave satellites. The chip in your head is wired to portions of your brain. You have learned, by biofeedback methods, to use the chip like an extra hand, except the "hand" has a thousand fingers and works with a mere thought. It is the controller of a complex computer terminal device.

As soon as the helmet is in place, the LCD screen forms an image, letting you choose from a number of network circuits monitored by your house computer. You can pick news, movies, communication with other people, education, or games.

You decide on games, and the image on the screen clears. As your eyes adjust to the close focus, it no longer looks like a screen. It's just like normal vision, except that the graphics quality is definitely (though subtly) superior. That quality is there to remind you that what you see is an electronic fantasy, not the real thing.

You can scan different radio frequencies, which you perceive analogously as different footpaths through a forest, as dirt roads, country roads, and superhighways.

Whoooop! With a feeling of roller-coaster acceleration and a slight touch of vertigo, you land on a high-speed game channel. You're automatically up and running on any of a hundred old games you've recently abandoned or you can start a thousand other games from scratch. You float over a game menu that scrolls swiftly beneath you, indicating in sights and sounds all the fabulous forms of entertainment that can be instantly yours. You make your choice (you don't have to speak or push buttons, you just think): ADVENTURE!

You see new images, new sets of choices, and a picture that indicates that there are others on the laser-and-fiber-optic, global network who, like you, want partners to play with or against. *Satellite Spy* sounds good tonight, and there are two others who want to play too, so with another thought you switch on the game.

The computerized game moderator

(an Artificial Intelligence) relates the game rules to you by shuffling through a fast sequence of visuals and by talking like a tobacco auctioneer over your audio channel. You have heard its spiel before, so you shut your eyelids tight, mentally call up an override, and leap directly into the game. All three of you — the other two are probably thousands of miles away — are experienced gamers, so tonight there will be secret rules which you'll have to discover to make your best score.

Suddenly you see that you are in the lounge of a military experimental satellite, with ten other people. Two of them are your opponents, the others are "simulacra" created by a program running on a large computer multinetwork that probably straddles a good part of the planet. Part of your mission in the game is to figure out who your opponents are, and which of the simulacra will help you steal the particle-beam jamming device. But you don't think in those terms, since all you know is that you are a spy, your nation's security depends on your obtaining the device, and you have only two hours (in real time) in which to do it.

Whenever you need information in order to play the game, an electronic voice tells you what you need to know. Otherwise, you are on your own. You explore the satellite, get to know the other people — it is almost impossible to tell the real ones from the false — and plan your strategy. One person tries to seduce you, but you are suspicious. Another seems angry with you, but you figure out that here is your ally, pretending to hate you so others won't suspect.

You find out that the device is not on board, but the device specifications are recorded in the satellite's computers, and you have to break computer security to get the information. It doesn't matter that you know nothing in real life about computer cryptography and parallel operating systems, since the simulation provides you with a means, if you can figure it out.

You know you are on the right track when you discover that one of the secret rules concerns telepathy. You quickly master the skill (you've played a lot of magic-oriented games) and learn that only the commanding officer knows which data bank contains the secret. But you also learn that someone else has read his mind before you. One of your opponents is ahead of you.

You suspect one of the characters is an opponent, so you pick a fight with her. She is much stronger than you, but you fight dirty, and you win.

Was your guess correct? It better have been because you've now precipitated the end-game.

You have to find the particle-beam data and get out at once. But you discover that the data bank has already been raided. The information has been randomly recoded. The jamming-device specifications are lost. Your mission is aborted. You have only one source of action remaining: Escape.

You escape from the satellite aboard a small, one-person garbage tug that has put in at the satellite for fuel and repairs. You smile grimly as you crouch, not moving a muscle, concealed beneath a huge pile of foul-smelling refuse.

When the game is finally over, the pictures before your eyes become more stylized. You see representatives of two figures, your opponents in the game. The person you neutralized was one of them, but the other was the Security Officer, whom you assumed to be a simulacrum, but who was in fact the other spy, playing a double game, as her skill required.

You made points for locating the jamming-device specifications, for figuring out and using telepathy, for neutralizing an oponent, and for identifying one of the simulacra as a helper. The person you neutralized is the real loser of the game, having only located the data without retrieving it. But even he made points for mastering the social situation, to which you paid no attention at all.

Your other opponent, the Security Officer, is the winner. She prevented you from stealing the jamming device, and then stole it herself. She escaped successfully from the satellite, and even discovered a plot to conquer the world. In winning the game, she amassed a huge number of points that she can carry with her to the next game like medals or battle trophies.

After the game is over your scores are displayed, your rankings with others who have played this game are compared, and you return to float above the rolling menu display.

You are physically and emotionally exhausted. There will be no more games tonight. Maybe some music. Then sleep.

The above scenario is a simple role-playing game that makes use of some advanced technology. We rushed through the game, but it serves to make a point: electronic entertainment in the future will be absorbing, stimulating, and mind-boggling. And this is just a taste of what is yet to come.

Satellite Spy represents only a midway point in the development of computerized recreation. It is nowhere near the ultimate. And there are other forms of recreation which are quite different from role-playing games. Computers can take you to new worlds of fantasy and the imagination. Yet as computers continue to shrink, like Lewis Carroll's Alice, they too can enter new worlds. Our games, our game clothes, our sports equipment, even our bodies can become hosts for tiny, implanted computers that moderate a game or act as our teammates or opponents. In the near future, our leisure time will be filled with computerized footballs, hockey pucks, ski bindings, go-carts, and motorboats. Like the sports-equipment company of today in its well-known TV ad, the *sportscomputer* companies of the future will boast that "We make weekends!"

In the coming months, we will use this column to focus on computer-assisted role-playing games — and on many of these other rapidly evolving areas of computerized, electronic entertainment. The point of view we'll adopt is that computerized entertainment (or entertainment of any kind) is not a trivial thing. There is big money in recreation as the arcade video game companies have demonstrated, riding the backs of computer chips out of non-existence in the early 1970s to a Midas-like income of $2.9 billion dollars in 1980.

Recreation is also the stuff of culture, providing us with music, plays, and literature, as well as games. You can farm with a stick, or farm with a ten-ton tractor, but unless you have a way to play, you have no culture.

In the months to come we hope to explore many surprising facets of electronic entertainment. We will look at some of the possibilities in the near future, some in the distant future, and some that might not really be possible at all. There is a whole area of board games, as hinted at by *Dark Tower* and computerized bridge, to be explored.

There are game applications for a multitude of computer-related technologies, including intelligent video disks, lasers, fiber optics, and other optical (light-based) forms of information processing and storage. There is artificial intelligence, super high-resolution graphics and animation, music and speech synthesis, and computerized vision and speech *understanding*.

AMERICAN BABY Aug. 1983
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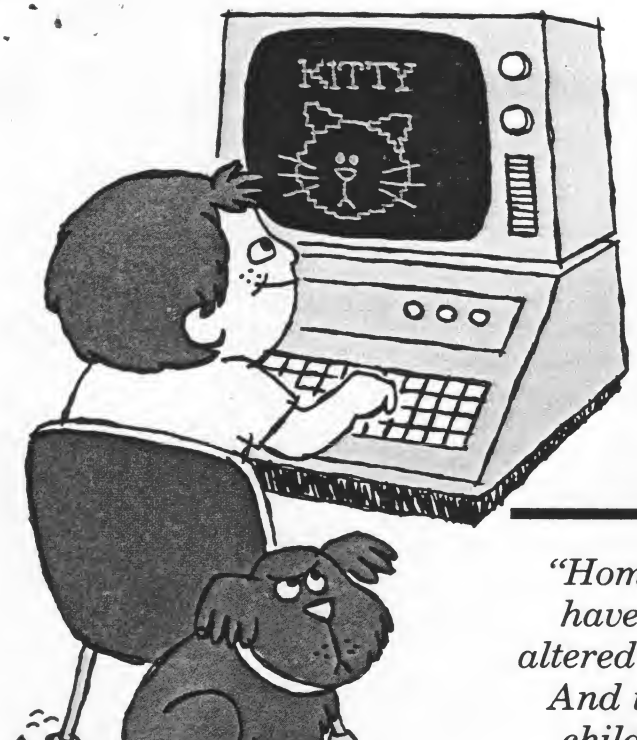

by Sylvia Scott

"Home computers... have dramatically altered the way we live. And the lives of our children, even very young children, are also being affected by these fascinating machines."

"Type L-O-A-D," coaches Justin's father. "Good. Now push Enter. OK, now we're ready to start." Even though Justin is barely five years old, he's learning how to use a computer.

When we bought our home computer four years ago, Justin was six months old. It seemed natural at the time to plop him on our laps as we worked at our respective projects; my husband used the computer to write business programs for his advertising agency, and I used the word processing feature to write articles. Justin would occasionally take swipes at the keyboard while we worked, and by the time he was 15 months old, he could type any key requested of him.

A New Way Of Living

Home computers (sometimes referred to as microcomputers, personal computers, or desk-top computers) have dramatically altered the way we live. And the lives of our children, even very young children, are also being affected by these fascinating machines.

The computer "is a game, a pleasure, a tool, a system that fits naturally into their [children's] lives," write the editors of *Time,* who in 1982 named the computer "Man of the Year." "Unlike anyone over 40, these children have grown up with TV screens; the computer is a screen that responds to them, hooked to a machine that can be programmed to respond the way they want it to."

Preschoolers, in particular, enjoy the continual interaction a computer demands of them. Preschoolers are hungry for knowledge, especially when they can acquire it through action. "A home computer is a great listener," explains Fred D'Ignazio, author of *The Creative Kid's Guide To Home Computers: Super Games And Projects To Do With Your Home Computer* (Doubleday & Company, 1981). "This is what separates it from a TV or radio; you can listen to, watch, and enjoy them, but you can't talk back to them. The computer is different. You have to give it commands to make it work; you have to answer its questions and guide and direct everything it does. You can't sit passively in front of it. Whether you're playing a computer in a game or feeding it new commands, you have to look sharp and put your mind in gear."

If you don't already own a computer, chances are your child's school might. There are currently 250,000 systems in schools around the country, and by 1990 the number is expected to increase tenfold. And while the current price for a home computer might seem prohibitive at $530, increasingly lower costs will eventually make it affordable to virtually all families. (It's estimated that by 1990 there will be almost seven million systems in use in American homes.)

When To Start

How young can a preschooler start learning on a computer? Although the answer depends on the ability of each child, as soon as a child is aware of cause and effect—i.e., she's learned that her actions (typing keys) produce an effect (on the screen)—lessons can begin. But keep them brief, enjoyable, and proceed only when your child is open and receptive. Never force computer education.

An infant is usually content to simply push particular computer keys and watch letters appear and disappear on the screen or to learn the various alphabet keys. Encourage experimentation because this is an essential first step to becoming familiar and comfortable with a computer's various basic functions.

It's important to teach your child to handle equipment properly. In our home hands must be washed before using the computer, and we firmly discourage pounding on the keyboard. Disk-driven computers take a floppy disk (a kind of plastic record) that is expensive and quite fragile. An incorrect grip can wipe out an entire program. Therefore, it's a good idea for parents to load programs for very young children. Some computers oper-

DENNIS KENDRICK

(Continued on page 34)

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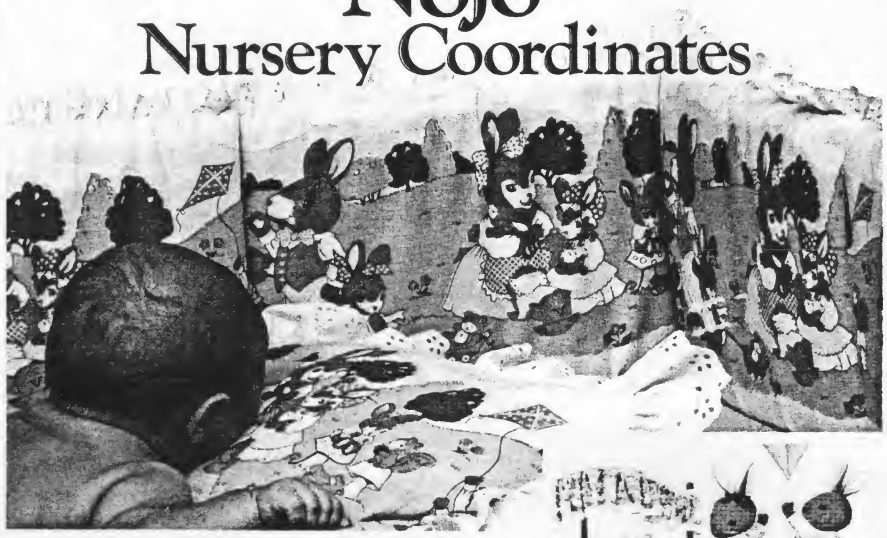

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(Continued from page 30)

ate on a less fragile cassette-loading system, and a young child can load these without any problem.

Preschool Programs

Once your child has mastered a cause-and-effect awareness of the keyboard, you're ready to introduce her to some of the excellent preschool programs available (see following recommended programs). At first you'll need to play these games with your child, but most programs are cleverly designed to enable the child to go "solo" after very little instruction.

Once you feel that your child understands the directions, let her work at it on her own. If she feels pressured to perform perfectly, she will reject the program.

If your child feels the program is too hard, simply remove it, and move on to a simpler computer activity. Tell her that next year, when she's a little older, she might enjoy the program more.

Writing Programs

Once your child has been introduced to various software packages and seems totally at ease with the computer, you can begin to write your own programs with him. By now your preschooler will be familiar with the many enjoyable things a computer can do and will have fun designing his own activities.

Most preschoolers start off by wanting to make the computer do "silly" things. One of Justin's first custom-written programs was making the computer print "Mommy is crazy!" continuously in various patterns across the screen. This tickled him endlessly. Then he learned to instruct the computer to make lined drawings and to print his name in different designs.

There are many excellent books available that give instructions for writing simple programs. Having a superior knowledge of computers isn't necessary to use these easy books, and most children progress rapidly after these program-writing lessons, as they thrill in gaining control of the computer. Our son now works excitedly with his father at developing quite sophisticated games. Justin invents them, and his father helps him program his designs.

Not all young children, however, are ready for program writing. Follow your child's lead as she indicates stages of interest. Above all, make sure he or she has fun. Remember, out of fun comes learning.

Here are some excellent books to help you introduce your preschooler to computers.

Basic Fun: Computer Games, Puzzles, and Problems Children Can Write by Susan Drake Lipscomb and Margaret Ann Zuanich; Avon Books, 1982; $2.25.

Computers For Kids by Sally Greenwood Larsen; Creative Computing Press, 1981; $4.95.

It's Basic: The ABC's of Computer Programming by Shelley Lipson, illustrated by Janice Stapleton; Holt, Rinehart, and Winston, 1982; $8.95.

Katie And The Computer by Fred D'Ignazio, illustrated by Stan Gilliam; Creative Computing Press, 1979; $6.95.

A New True Book: Computers by Karen Jacobsen; Children's Press, 1982; $9.25.

The following computer programs are suitable for preschool children. Although no previous computer experience is needed, the range of sophistication varies from program to program, and a few of the programs might require some parental assistance. This list should serve as a guide to selecting suitable programs for your preschooler. But before buying any computer program, make sure you thoroughly test it at the computer store.

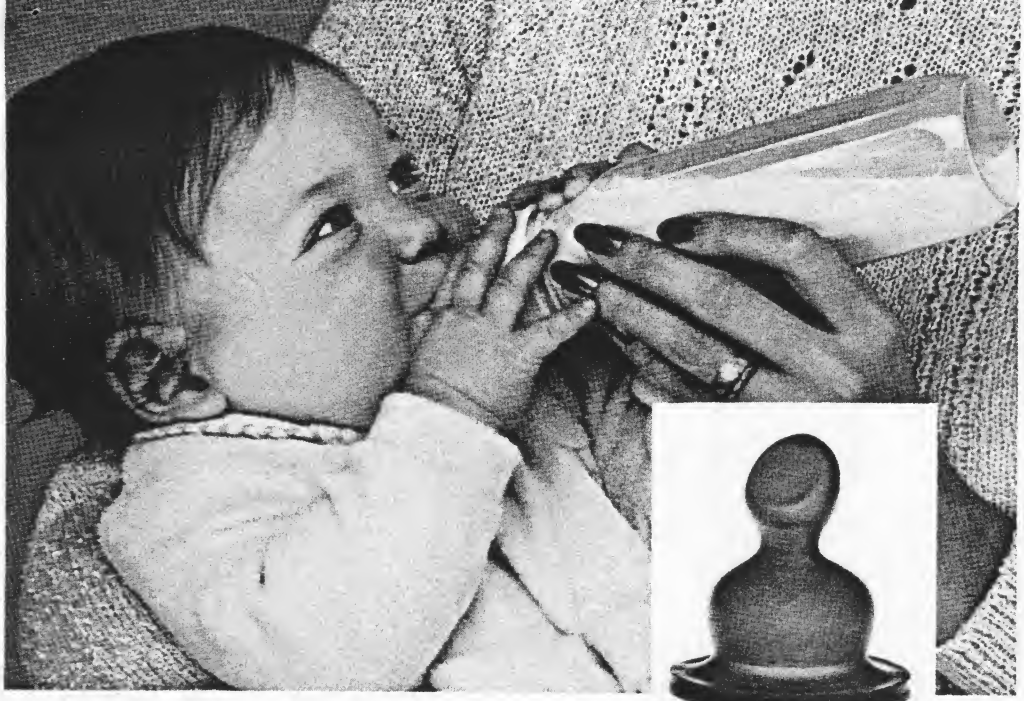
Apple Computer, 20525 Mariani Avenue, Cupertino, CA 95014 (800-538-9696)

Two colorful, stimulating game packages developed by the Children's Television Workshop feature "Sesame Street" characters.

Mix And Match; $50.00; for ages four and up. Consists of four games: "Mix And Match" creates mixed-up puppets in any configuration the child selects; "Animal" is an interactive question-and-answer game where the child teaches the computer about animals; "Layer Cake" is a stacking puzzle game; "Raise The Flags" is a fun variation of the well-known "hangman" spelling game.

Ernie's Quiz; $50.00; for ages four to

(Continued on page 36)



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KIDS AND COMPUTERS

(Continued from page 35)

seven. Consists of four games: "Guess Who" challenges your child to guess which muppet is slowly appearing on the screen; "Jelly Bean" is an easy counting game; "Face It" allows the child to put together humorous faces by selecting various features; "Ernie's Quiz" asks the child to guess which muppet is described in the clues given.

Dynacomp, Inc., 1427 Monroe Avenue, Rochester, NY 14618 (800-828-6772)

Children's Carousel; $19.95; for ages two to six. Consists of nine games. Five games involve letter and number recognition using large, colorful letters; three shape and color comparison games teach the concepts of same and different, matching shapes, and color differentiation; the remaining game uses the keyboard to introduce the concept of cause and effect.

Hodge Podge; $18.95; for ages 18 months to seven years. Each key the child presses produces a fun graphic accompanied by sound effects. Some involve simple animation appropriate to the key pressed (for example, pressing "V" produces an erupting volcano).

Edu-Ware Services, Inc., P.O. Box 22222, Agoura, CA 91301 (213-706-0661)

Spelling Bee Games; $29.95; for ages four to seven. Graphics bring to life four different spelling games. All help develop simple spelling/reading skills in an entertaining and fun way. Parental help required.

Counting Bee; $29.95; for ages three to six. Eight games graphically teach the preschooler about counting, addition, subtraction, shape discrimination, weight, and measure. Parental help required.

The Learning Company, 545 Middlefield Road, Suite 170, Menlo Park, CA 94025 (415-328-5410)

Juggle's Rainbow; $29.95; for ages three to six. Four games designed to teach concepts of left and right, above and below, as well as familiarizing preschoolers with certain hard-to-recognize letters. No reading required.

Bumble Games; $39.95; for ages four to ten. Six games teach the use of number pairs to describe locations on a graph. The skills taught here provide the foundation for understanding and building charts and graphs, locating points on the map, and eventually designing computer graphics.

Gertrude's Secrets; $44.95; for ages four to nine. Unique series of game rooms that the child can explore: two array puzzle rooms, three train puzzle rooms, and two loop puzzle rooms. The child learns about differences in shapes and colors with the help of "Gertrude," the animated goose.

Nova Software, P.O. Box 545, Alexandria, MN 56308 (612-762-8016)

Finger Painting and **Color Book 1;** $34.95/set; for ages three and up. "Finger Painting" allows the child to create freehand pictures and drawings by moving an animated hand that has been dipped into a chosen color. "Color Book 1" is a "ten-page" coloring book that the child colors using a "joystick."

Program Design, Inc., 95 East Putnam Avenue, Greenwich, CT 06830 (203-661-8799)

Preschool IQ Builder 1; $23.95; for ages three to six. This program teaches two concepts: "same and different" demonstrates various shapes, colors, letters; the second involves letter recognition and requires the child to match letters displayed on the screen with those on the keyboard.

Preschool IQ Builder 2; $23.95; for ages three to six. Six lessons teach the preschooler to match the letters, numbers, and shapes shown at the top of the screen with the correct object at the bottom of the screen. Various levels of difficulty are included. The child is rewarded for a correct answer with simple animation.

Silicon Valley Systems, 1625 El Camino Real 4, Belmont, CA 94002 (415-593-4344)

Toddler's Tutor; $24.95; for ages two to six. Four sections teach letter and number recognition. Simple graphics are used for demonstration.

Spinnaker Software, 215 First Street, Cambridge, MA 02142 (617-868-4700)

Delta Drawing; $44.95; for ages four and up. A graphics drawing problem allows children to create their own colorful drawings using keyboard commands. Simple drawings can be produced quickly by the beginner; however, a powerful set of graphics commands is also available for the more advanced user.

FaceMaker; $34.95; for ages four and up. This program provides a delightful computerized version of "Mr. Potatohead." Children construct a face by selecting from the available features. The face they build can then be "animated" to wink, smile, cry, stick out its tongue, or wiggle its ears.

Software Productions, Inc., 2357 Southway Drive, P.O. Box 21341, Columbus, OH 43221 (614-486-3563)

Micro Mother Goose; $39.95; for ages three to nine. This package consists of nine colorful Mother Goose rhymes with music and animation. Also included are three simple children's nursery rhyme games. No reading is necessary.

Texas Instruments, Consumer Relations, P.O. Box 53, Lubbock, TX 79408 (800-858-4565)

Early Learning Fun; $29.95; for ages three to six. Colorful, exciting, and educational activities help teach about shapes, number and letter recognition, counting, sorting, and the alphabet, as well as teaching computer skills.

Addition-Subtraction I; $39.95; for ages four to six. The initial module of a series developed in conjunction with Scott, Foresmen, and Co. (a leading publisher of textbooks). Teaches basic arithmetic skills and provides drills for reinforcement.

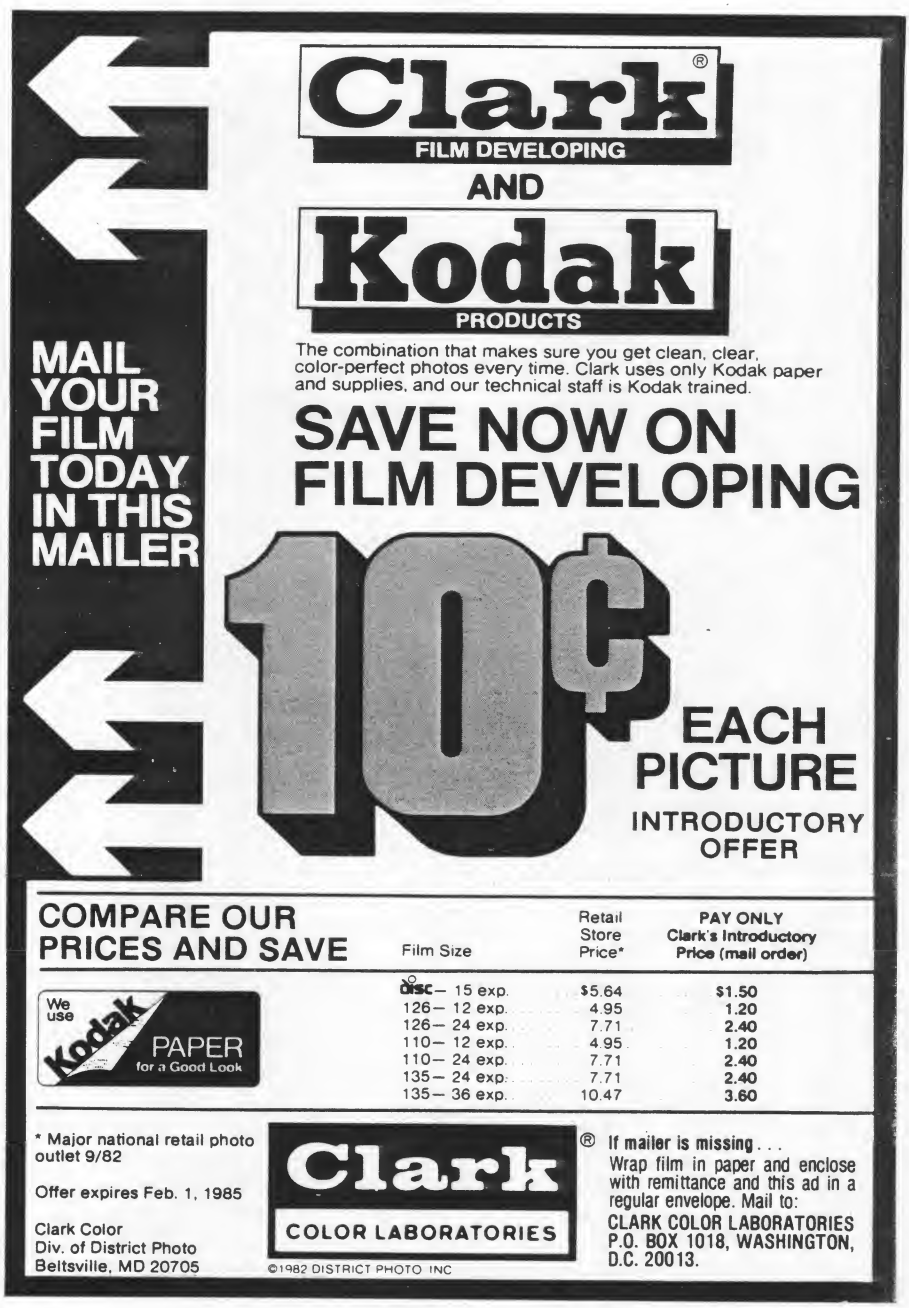
Early Reading; $54.95; for ages four to six. Color graphics and computer speech introduce and reinforce important reading skills. Requires speech synthesizer.

Xerox Education Publications/Weekly Reader, 245 Long Hill Road, Middletown, CT 06457 (203-347-7251)

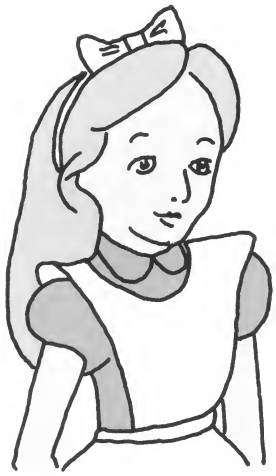
Stickybear Bop; $39.95; for ages three and up. This program features three delightful animated shooting galleries where the child "bops" a variety of whimsical objects. The program provides a simple, enjoyable introduction to computer skill games.

Stickybear Numbers; $39.95; for ages three to six. This program colorfully introduces number and counting concepts. When a number key is pressed, the child is rewarded with a graphic display showing the corresponding number of animated objects.

Stickybear ABC; $39.95; for ages three to six. Each letter in the alphabet is demonstrated by bright, colorful animated pictures and sound when the corresponding key is pressed. Two scenes are available for each letter. □



Multimedia Sandbox



Through the Looking Glass: The Multiple Layers of Multimedia

By
Fred D'Ignazio

Oh, Kitty, how nice it would be if we could only get through into Looking-glass House! I'm sure it's got, oh! such beautiful things in it! Let's pretend there's a way of getting through into it, somehow, Kitty. Let's pretend the glass has got all soft like gauze, so that we can get through. Why, it's turning into a sort of mist now, I declare! It'll be easy enough to get through..."

Alice in Lewis Carroll's *Through the Looking Glass*

And You'll Feel Just Like Alice

In a few short years when you look at the monitor screen on your computer, it will be like gazing into Alice's magic looking glass. You will see worlds within worlds, resizable windows into reality, layers of knowledge, images, symbols, animations, and 3-D mathematical models.

Perhaps this "looking glass"—these worlds, layers, and windows—will be displayed on a tile-like mosaic of flat-screen monitors "pasted" on the wall behind your CPU, or perhaps they will be squeezed onto a single screen connected to several speaker systems so that multiple audio "windows" can be played and accessed simultaneously with multiple visual (text, diagrams, photos, full-motion video, and animation) windows.

And, there you'll be, Alice-like, perched on the chimney piece, gazing into this looking glass. All the while, running through your mind, will be the question: "What should be my first step?"

BOWs: Buttons, Overlays, and Windows

Before you panic, ask yourself "What are the things I might do on a multimedia computer?"

It is likely you will be at the computer for one of the following purposes:

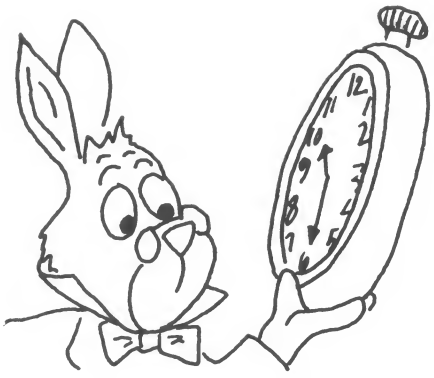
- Browsing
- Exploring
- Capturing
- Communicating
- Learning
- Investigating
- Composing

Regardless of your purpose or the make of your computer, you will be working with at least three kinds of basic constructs on the multimedia computer of the future: buttons, overlays, and windows.

Buttons represent "hot spots" or gateways from the information displayed in a single window (card, node, etc.) to information displayed in other windows. You can think of buttons as little jet cars that transport you from window to window.

Windows are the places that buttons take you to. Each window represents a multimedia "knowledge window" (e.g., the window could be an article on Thomas Jefferson from an encyclopedia stored on CD-ROM, a three-minute videodisc clip of the Vienna Philharmonic playing Beethoven's "Emperor's Concerto," an audio database of Melanesian folk music, a live news report on an election in Soviet Armenia, or a computer animation of the Voyager 2 spacecraft doing a flyby of Neptune). The windows may be related thematically (e.g., audio, video, graphical, and text representations of "whales") in a single multimedia document (a "stack"), or they may be unrelated parts of different documents.

In a full-blown hypermedia system of the future, each window will be a looking glass of its own into a sort of *virtual reality*. Users will have complete control over the representation of reality contained in the win-



dow. They will be able to rotate the images in the window, zoom in and zoom out, pause, go into fast forward and reverse, or step through events one step at a time. They will be able to add invisible acetate overlays (see below) to annotate existing windows with text, diagrams, and pictures. Each key word in the window will be automatically referenced to online encyclopedias, multimedia databases, dictionaries, and thesauri. A user can resize a window larger to take up dozens of virtual (imaginary, large) screens or smaller to the size of a postage stamp or less. All the while, the window stays active—movies keep playing, animations keep rolling, text scrolls by. The user can dive in at any moment, cut out a slice of reality (a "sound byte," "visual byte," or "thought byte"), and paste it somewhere else in the window or in a different window.

Overlays are layers of windows atop other windows and layers of buttons atop other buttons. The buttons and windows may be invisible, visible, or translucent. The effect of overlays is to make your computer screen into a real, three-dimensional pool of knowledge, much like Alice's looking glass.

Get the picture?

KISS—Keep It Simple to Survive

You won't have to worry about your students diving into this multimedia "looking glass." They will take to it like Alice.

But what's to become of adults who have been schooled for most of their lives in linear, print-based media? How are they to handle knowledge exploration that seems to be some kind of complex combination of *Nintendo*, *Wheel of Fortune*, and MTV?

In the first three "Sandbox" columns we explored ways teachers can begin to play with multimedia by assembling "scavenged" multimedia centers equipped with desktop computers and old equipment scrounged from around the school. We looked at how such a center could be constructed and for what kinds of activities students might use such a center.

We've kept things simple so we wouldn't get lost. Now it's time to go deeper, to investigate multimedia at all levels. But we'll still follow the KISS rule—Keep It Simple to Survive! This month we'll separate multimedia into seven layers and take a brief look at each layer. Let's begin with the world of the present.

Layer #1: Databases, Publishing, and Telecommunications

This is the layer most computing teachers find themselves at now. Their students are building and accessing databases on science, social studies, etc. They are doing some word processing and perhaps some desktop publishing. And they are making their first attempt to hook up a computer modem and connect their computer to other students' computers across their country and across the world.

At this layer the computer is hooked up to relatively few devices: a disk drive or two, a printer, a monitor, and perhaps a modem.

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Most data being processed in the computer is *textual data* (i.e., words and numbers). Databases are purely textual, publishing is mostly textual (with some illustrations to spice things up), and telecommunications is purely ASCII (limited to the 26 letters in the alphabet, punctuation, the blank space, the 10 ditgits 0 to 9, and one or two control characters such as a carriage return or line feed).

If you are already working in all three of these areas with your students, rejoice! In the world of the 1990s you will be doing these same computing activities—databases, publishing, and telecommunications—except you will add a multimedia dimension to each activity. But conceptually you will still be in the same ballpark!

Multimedia Databases. By attaching computer controlled, random-access devices to your computer such as a laserdisc player and a CD-ROM player, you can enter the world of multimedia databases. With a database program such as Optical Data's *LaserTalk*, IBM's *LinkWay*, or Apple's *HyperCard*, you can access your multimedia database. Your database may be *Billie Holiday's Greatest Hits* (on audio CD), Brøderbund's *Whole Earth Catalog* (on CD-ROM), or Optical Data's *Encyclopedia of Animals* (on laserdisc). With multimedia databases like these and with appropriate software, you can search and retrieve information in the form of text, still images, full-motion video, sound effects, high-fidelity music, audio recordings of famous speeches, and computer animations.

Multimedia Publishing. Major publishers such as Time-Warner, National Geographic, The Wall Street Journal, and others, are quickly diversifying beyond *print* publishing to *multimedia* publishing. In the future these publishers say that we should think of them as "information providers" or "content providers" rather than as publishers. In fact they will be multimedia publishers who publish nonprint media (audio tape, videotape, computer software, telecommunications services, etc.) as well as print media.

In the future, students and teachers will also be able to publish in multiple media. They will be able to create student movies, video yearbooks, radio documentaries, computer slide shows, hypermedia stacks, and more. Participating in such services as National Geographic's Kid's Network, they will be able to collaborate with other teachers and students in remote classrooms and *telepublish* original scientific findings on major environmental issues such as acid rain. Programs are now being tested that will enable students to compose *multimedia documents* by cutting and pasting segments from such sources as news programs, PBS documentaries, compact disc music, and online databases, and assembling them into a final multimedia file that can be stored on a computer disk.

Multimedia Telecommunications. Wire services such as AP and UPI, newspapers, and magazines use the phone system to transmit photographs and artwork (*infographics*) along with numbers and words around the globe. Television and radio broadcasters transmit moving images and sounds via satellite almost instantaneously across thousands of miles.

In the 1990s, satellites, faster modems, higher-speed desktop computers, and video-compression techniques will make it possible for students in widely dispersed classrooms to capture and share images and sounds as part of their multimedia publishing and multimedia databases. "Eyewitness" student reporters will be able to collaborate with fellow students across continents to assemble newspapers, hypermedia stacks, databases, and videos from original materials they have collected in their community. Multimedia pen pals will be able to exchange videos of their families, classmates, school sports, and extracurricular activities. Student scientists and researchers will have access to the image, voice, and words of famous experts and policy makers from all over the globe for use in student multimedia term papers and science projects.

Layer #2: The Computer-Video Connection

As we saw in the second column ("Multimedia on Wheels"), all layers of multimedia begin with one simple connection—between a VCR and a computer. On most computers all you have to do is take the monitor-cable out of the computer monitor and plug it into the VIDEO IN jack of a VCR. With a blank tape in the VCR and the VCR set to "Record," you can begin recording crisp, clear computer images directly onto videotape—without a video camera or expensive hardware or software!

Layer #3: Audio and Video Digitizing

Digitizing—converting electronic signals into digital (binary, "on-off") format—is also at the heart of multimedia. Digital codes for words and numbers were devised at the dawn of the computer age in the 1940s, so most computer processing has been limited to numbers and words. Now new devices—*audio digitizers* and *video digitizers*—are becoming available that allow us to convert music, sound effects, voices, video images, artwork, and photographs into computer files. Once these pictures and sounds are digitized they can be stored on a computer disk, recalled, and manipulated by any of a variety of computer music programs, paint programs, slidemaker programs, and desktop publishing programs.

Digitizing is accomplished by plugging a digitizer circuit card into the motherboard of a computer. The circuit card has cables or jacks that allow you to connect your computer to a video source such as a video camera or an audio source such as a record player. The digitizer card also comes with a software program stored on a computer disk. When you run the program you can activate the digitizer card to "capture," "grab," or "freeze" the sounds or pictures coming from the external source and convert them into a binary digital file inside the computer.

There are many different kinds of video digitizers. A *frame grabber* captures an incoming video frame in 1/30 of a second and

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LETTERS AND FIRST WORDS
The Computing Teacher, Feb. 1985
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transforms it into a computer graphic. Frame grabbers are expensive. Less expensive video digitizers may take up to six seconds (or 180 frames) to create a digitized image in the computer. In addition, there are *scanners* that scan pages with printed text, graphics, and photos and transform them into computer image files.

Audio digitizing is known as *sampling*. A sound wave is captured by a microphone or input jack and piped into a computer. Samples of the sound wave are made by the sampling program then recorded as digital codes inside the computer's memory—the higher the number of samples per second (typically 5K, 7K, 11K, or 22K), the more lifelike the digitized sound.

Sound waves that have been digitized can be displayed on the computer screen then cut, copied, pasted, and manipulated just like words in a word processor. A sampled sound can also be piped into a sampling keyboard that has MIDI (Musical Instrument Digital Interface) jacks. The sound becomes a "musical instrument" that can be played, at different pitches, on every key on the keyboard. This is remarkable, considering that the sound might be anything from a jazz saxophone to a water fountain, a fire alarm, a person's voice, or seagulls overheard outside the classroom window.

This ability to capture, manipulate, and control sound waves allows student producers to create *audio environments* that will greatly enrich their multimedia presentations.

Layer #4: Video Overlay

Another word for video overlay is *genlock*—locking the signal from an external video source *underneath* a picture being generated by the computer. The words "video overlay" come from the process of overlaying the graphics image from the computer *atop* the video image. To see video overlay in action, turn on your TV set, turn down the volume, and watch the screen. Pay special attention to news programs and commercials. Whenever you see graphic images appear on the screen atop video images, that's "video overlay."

When would you use video overlay in the classroom? For example, a student might interview the mayor for a videotape "term paper" on municipal efforts to counteract pollution. After shooting the interview of the mayor, the student would rewind the videotape to the beginning of the segment, then cable the video camcorder to the INPUT jack of a video-overlay circuit card installed in the computer. This would feed the video signal into the computer, and the mayor's image would appear on the computer screen. Now the student could load a paint program into the computer, frame the mayor's image inside a bright blue graphics box, and type the mayor's name and title (as a *chyron*) across the mayor's chest. The final image (video plus graphics) can be quite snazzy!

Video overlay is accomplished by plugging a video overlay (or genlock) circuit card into the motherboard of the computer. The circuit card has cables or jacks that allow you to hook up a video source for INPUT and a video destination for OUTPUT. The input source can be a video camera, a VCR, a videodisc player, or a broadcast TV signal from an antenna, cable, or satellite. After the computer overlays a graphics layer onto the incoming video, the combined signal is output to a large-screen monitor, VCR, or video projector for presentation. Or the signal can be rebroadcast (e.g., over the "public access" channel on local cable).

How does video overlay differ from dig-

AppleWorks then.

While old favorites are hard to part with, here's one exception.

Introducing the new AppleWorks® 3.0 program. It has the same look and feel of original AppleWorks plus dozens of new features. Like a super-fast spell checker. Advanced spreadsheet functions. More mailing labels across the page. Easier access to files. Built-in support for more printers and memory cards. An expanded clipboard, and much more.

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itizing? The input source (VCR, video camera, videodisc player, etc.) can be the same in digitizing and video overlay. However, once the video enters the computer, different things happen. The *digitizer* circuit card converts a single frame or still image from the video into a computer graphic image. This image can then be saved as a computer (binary) file on the computer's disk. The *video overlay* circuit card, on the other hand, does not convert the video image into a computer graphic. Instead it *combines* the image with a computer graphic and outputs the combined signal as a standard (*composite* or NTSC) signal to a VCR or TV. Some video overlay cards also output an RGB signal as well.

You can *manipulate* digitized images (e.g., shrink them, invert them, copy them, expand them). You cannot manipulate video overlay images.

You can *print* digitized images. You cannot print video overlay images. (You can print the graphics layer, but not the video layer.)

Already these simple distinctions are beginning to dissolve. Expensive circuit cards are now available which combine overlay with digitizing. Full-motion video images can be piped into the computer then expanded, shrunk, rotated, and placed anywhere on the computer's screen. This is possible because the images are really digitized images. High-speed computer chips and video-compression techniques (e.g., DVI-Digital Video Interactive) make it possible for the computer to handle these images in color and at a rate of 30 frames per second.

Layer #5: Still-Image Video

Think of still-image video as "video slides." A still-image video camera is used to take a video slide. the slide consists of a single frame of video, stored on a small disk roughly two-thirds the size of a 3.5" disk. Up to 50 video slides can be stored on a single disk—sometimes with a couple seconds of audio attached to each slide.

If you have purchased one of the new still-image "camcorders" (e.g., the device from Canon advertised on television), you can plug video cables directly from the camcorder to your TV or VCR and play your video slides, one by one, on your television screen. If you like, you can save the images on a blank videotape in your VCR in the form of a video slide show and send the videotape home with your students, or mail the tape to "video pen pals" in the U.S. or abroad. On broadcast television; you see still-image video used as a dramatic "freeze frame" at the end of a movie or commercial. For example, at the end of a news program the poignant still-image of a white child playing with a black child might appear while production credits scroll over the top of the image (an example of still-image *and* video overlay).

Still-image video is useful because it can be combined with digitizing and video overlay. You can digitize the still image, then manipulate it and add it as a graphic background in a large number of paint programs and computer slide-show programs. You can also send the still image into the computer as the video layer and add a graphics layer (titles, boxes, clip art, etc.) atop the image.

In the near future still-image video players may have an RS-232C jack similar to the jack on the back of videodisc players. This will allow teachers to connect their computer to their still-image player. The advantage that the still-image player offers over videodisc players is that teachers and students can capture their *own* images then play them back under computer control. The still-image player is also preferable to a VCR

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because the images on a still-image player can be accessed randomly and almost instantaneously by the computer. This makes the still-image player suitable for use as a device for interactive hypermedia (i.e., nonlinear database search, retrieval, navigation, and reporting).*

Layer #6: Videodisc and CD-ROM

Videodiscs and CD-ROM discs are laser discs that can be accessed by a computer cabled to the appropriate videodisc player or CD-ROM player. Information is "read" from both kinds of discs by a laser beam being refracted off the disc's surface. A videodisc (in CAV, or computer-readable, format) can hold up to 54,000 still images or up to 30 minutes of live, full-motion video and sound on each of its two sides. A CD-ROM disc typically holds around 500 million bytes, or characters, of data on its lower side. A videodisc is either 12 inches or eight inches in diameter; a CD-ROM disc (or audio CD disc) is approximately 4.75 inches in diameter.

A videodisc player and a CD-ROM player are connected to the computer as *input-only* devices. Videodiscs and CD-ROM discs can be loaded into the players (one at a time) as multimedia databases (text, photos, full-motion video, sound, and animation) that can be accessed by a computer program running on the computer. The multimedia data on these databases can be accessed much more quickly than data on a VCR, but not quite as quickly as data on a computer's hard disk or internal (RAM) memory.

Until recently only text, diagrams, animations, and digitized pictures and sounds could be stored on CD-ROM discs. Now special-purpose DSP (Digital Signal Processing) chips and video-compression techniques make it possible to store over an hour of full-motion video and high-fidelity digital sound on small (4.75" diameter) DVI disc. Audio compact discs can already be accessed interactively by computers (using the same CD-ROM players), and high-fidelity digital sound can be played out of amplified speakers cabled directly to the CD-ROM player.

It is possible to create your own laserdisc or CD-ROM disc for under $600 (as a one-of-a-kind *check disc*). In the near future we will see *read-and-write* laserdiscs and CD-ROM discs. Users will be able to record their own multimedia data on these discs, then recall the data using customized database programs. However, the need for computer speed and storage will become prodigious. A system currently on the market for professional video producers, for example, requires users to hook up seven 600-megabyte hard disk drives to their computers just to store a single hour of live, full-motion video. That's 4.2 *gigabytes* of online storage!

Layer #7: Hypermedia

The definition of hypermedia can be very simple or very complex. At one level, hypermedia is merely a way to organize information *topically* as well as *linearly*. This is the same relationship you see between a book's index and its table of contents. In the table of contents the book's parts (chapters) are listed in order of their physical appearance in the book. In the index, the major topics in the book are listed in some non-physical (e.g., alphabetical) order. Under each topic are lists of pages on which references to the topic can be found. For example, under "reality" in Heinz Pagel's *Dreams of Reason* (Bantam, 1988) you see:

computer simulations of, 89-90
depictions of, 163
differing views, 325-326
dualistic views of, 11-12

and so on.

In a hypermedia system such as *HyperCard* from Apple Computer, linear and topical ways of organizing a subject can be overlaid, one atop the other. For example, if Heinz Pagel's book were created as a *HyperCard stack* (a sequence of related "cards," pages, windows, or screens), then it would be possible to create *HyperCard* buttons that would let a user navigate linearly or topically through the book. For example, left and right arrow buttons could be used to turn the pages (or "cards") in the book. In addition, key words in the book representing major topics (such as "reality") could be made into buttons. When the user pointed a screen-arrow at one of these words and clicked on the mouse button, *HyperCard* would send the user to the next page in the book on which that word appeared. By clicking on the word again the user would be transported to still the next page. This process would be equivalent to looking up the word in the index and turning to the pages on which the word appeared.

Hypermedia enables users to navigate linearly or topically through an online database. This becomes a powerful tool when the database is composed of *multimedia data,* such as text, photos, full-motion video, computer animations, spoken words, musical passages, and sound effects, and when the computer is hooked up to several input devices at the same time, such as a hard drive, a video camera, a videodisc player, a CD-ROM player, a VCR, broadcast television, a scanner, a microphone, and modem.

Hypermedia can be a text-only environment with only one layer of information being displayed to the user at a time. Or it can be gradually expanded into a full-scale multimedia environment that combines all the above layers.

At this expanded, full-blown level, each hypermedia "card" can be seen as a gateway to multiple, simultaneous representations of a given subject that are stored in a stack (the thematically linked group of cards). By pressing buttons on the card's surface, users can instantly call up "windows" and "overlays" featuring dramatic video clips, real-life photographs, colorful animations, recorded speeches, and sound effects. These windows can be called up separately and closed after they are viewed (or "listened to"), or they can be arranged around the screen as simultaneous, multiple representations of a given subject. For example, in a "Whale Watch" stack of the

* The idea for connecting the still-image player to a computer comes from Dr. Carrie Heeter, Director, Communication Technology Laboratory, Michigan State University, East Lansing, Michigan. Dr. Heeter is doing some of the most advanced hypermedia research and development in the United States.

future, a student team might have the following active windows on the screen at the same time:

- A video of a finback whale feeding on herring (with sound).
- A video of a mother humpback whale with her calf (with sound).
- A diagram of the humpback whale's internal anatomy.
- A map of major humpback whale feeding grounds in the North Atlantic.
- A page from Farley Mowat's book *A Whale for the Killing* (Bantam, 1972).
- An audio window with buttons keyed to different whale songs.
- A scratch-pad window half-filled with notes the student team is making based on their observations.
- A storyboard window with each tiny storyboard frame being a miniature, full-motion version of the other windows.
- A multimedia "document" window with text, buttons, and icons. (The document is the hypermedia stack—a multimedia term paper—that the student team will complete and submit to their teacher for a grade.)

In the past, multimedia and hypermedia were offered as frozen, prefabricated databases stored on laserdisc or CD-ROM. A student team could *navigate* through these databases, but could not use them as raw material to rearrange or *repurpose* for their own composition.

This view is changing quickly. Today's *hypermedia systems* (multimedia databases plus search and retrieval software) are viewed as combined *navigation* and *composition* tools. For example, Apple's new *Visual Almanac* is a two-sided videodisc (that stores a total of 108,000 multimedia images—or over 7,000 multimedia "objects") accompanied by 14 megabytes of *HyperCard* stacks that offer three levels of user interaction:

- **Collections.** Explorer teams can "browse" through the collections of images, text, sounds, etc. just as they might browse through a regular printed almanac or through an art museum.

- **Activities.** Teams are encouraged to explore the almanac thematically and interact with different subject areas through dramatic story problems, by making experiments, forming questions, and testing hypotheses.

- **Compositions.** Teams can create their own multimedia "documents"—narrative text passages illustrated with full-motion video clips, colorful video slides, sound effects, music, etc.

Next Month

Next month we'll look at the actual hardware and software required to implement these multiple layers of multimedia on each of multimedia's major computing platforms, including Apple II computers, the Macintosh, MS-DOS computers, and the Commodore Amiga.

In the meantime, if you have a strong reaction to anything discussed above, or if you are exploring new areas of multimedia, I would appreciate hearing from you.

[The Computing Teacher, c/o Fred D'Ignazio, 1302 Beech Street, East Lansing, MI 48823; AppleLink: X1110; America Online: Explorer00; MCI Mail: fdignazio, Bitnet:usernllh@sfu].

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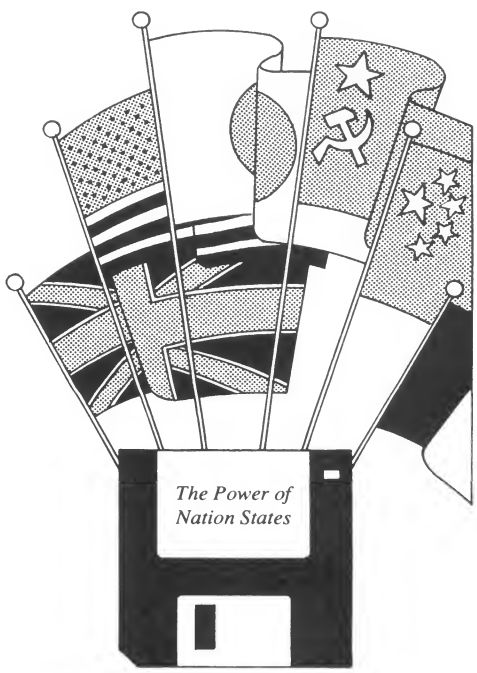

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OPINION AND COMMENTARY

Babe's son, Fred, finds niche as author

By Bob Finucane

Very little happens in this corner of the commonwealth that doesn't interest Sheriff John Taylor.

At any gathering of more than three, Julie DeJohn excepted, John is guaranteed to appear. I don't know if he's looking for someone in particular or just browsing, but he's almost ever-present.

So it wasn't surprising to see him last Friday afternoon at the Towne House in Media, where Fred D'Ignazio was autographing his latest book for assorted friends and fans.

The sheriff was not the only representative of county government in attendance. For adding luster to the cluster were Judges Louis A. Bloom and R. Barclay Surrick, each fondling a copy of Fred's "How to Get Intimate with Your Computer."

"I never realized Babe had a son with talent in this direction but I'll tell you this," said Bloom with a wink, "— if Fred writes as well as Babe runs a restaurant he'll do all right."

Fred's father, of course, is Babe D'Ignazio, who is to Media what hot peppers are to hoagies. And Fred, from what he reveals in his book, is showing the same persistence his father exhibited over 30 years in turning a shot and beer hole-in-the-wall into a block-long dining experience, which the Towne House has become.

"When I wrote my first book, 'Katie and the Computer,' I created a form letter on my computer and sent it to 100 publishers," Fred explains.

"To do this took considerable effort, even using the computer (and sometimes because of the computer). But there's no way I would have sent out so many letters without the computer's help.

"Why did I send out so many letters? I had heard that Dr. Seuss had been rejected by 37 publishers before he had his first book ("And to Think That I Saw It on Mulberry Street") published.

"I figured that it took a lot of guts for Dr. Seuss to stick it out that long (especially in the era before word processing). And I figured that if Dr. Seuss had to send out 38 letters to get published the first time then I would have to send out at least twice as many. So I did.

"And it worked. In response to the 99th letter, Creative Computing Press, of Morristown, N.J., picked up the book and published it. It was that close. After 100 letters, I was ready to give up."

Fred's pithy paperback (155 pages) takes a lot of the mystery out of learning to operate your home computer. Even the chapter titles are intriguing: A Tale of Romance and Seduction, It's Your First Date, Going Steady, Stripping Away Your Inhibitions, The Joy of Real Intimacy, Guides to Advanced Intimacy.

It would seem that Fred is doing for computer science what Joan Collins had done for oil — giving a plain Jane business a sexy facade.

And maybe just in time, too. In his book, Fred describes the 1954 fable in which a monstrous supercomputer was created out of all the world's other computers.

When the computer was turned on, anxious humans fed it the question they considered of paramount importance: "Is there a God?"

The supercomputer's reply was instant and haughty: "There is now!"

JULY 22, 1983/(ISSN 0000-0019) VOL. 224 NO. 4 $2.00

Publishers Weekly

The Journal of the Book Industry

CHILDREN'S BOOKS FOR FALL

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The leaders with older readers

LODESTAR BOOKS

Sparkling Fall/Winter books that reflect the tastes and interests of today's YAs

Fiction

CHIP MITCHELL: THE CASE OF THE ROBOT WARRIORS

By FRED D'IGNAZIO. *B&W drawings by Larry Pearson.* Computer brain sleuth Chip Mitchell returns with eight new solve-it-yourself mysteries. Join the thousands of readers who matched wits with him in *The Case of the Stolen Computer Brains*, which *Kirkus Reviews* predicted "the chip-savvy generation [would] gobble up BYTE by BYTE."

Ages 10-14. January 1984. $9.95*

SKINNY MALINKY LEADS THE WAR FOR KIDNESS

By STANLEY KIESEL. "An explosively funny tale," said *Publishers Weekly* about *The War Between the Pitiful Teachers and the Splendid Kids.* Good news! Its subversive hero is back in a marvelously zany sequel—this time to put the Kidness back into kids the system has turned into perfect Young People.

Ages 12 up. February 1984. $11.95*

RAZOR EYES

By RICHARD HOUGH. In this powerful, fast-moving novel, Mick Boyd grows from a boy to a courageous fighter pilot when he confronts not only the enemy but his own fears during World War II. A Junior Literary Guild Selection.

Ages 12 up. November. $10.95*

SIZZLE AND SPLAT

By RONALD KIDD. Introducing Sizzle (a.k.a. Prudence Szyznowski) and her buddy Splat (a.k.a. Arthur Hadley Reavis Pauling III), two fresh young sleuths who get into a series of madcap scrapes as they investigate a mystery involving their youth orchestra.

Ages 12 up. November. $11.95*

UNCANNY TALES OF UNEARTHLY AND UNEXPECTED HORRORS

Ed. by HELEN HOKE. Ten super-chillers by such masters as Ray Bradbury and John

Nonfiction

FAR OUT FACTORIES Manufacturing in Space

By MALCOLM E. WEISS. *B&W photos.* What kinds of manufacturing can be done in space? How and why will products be made there? Who will own and run space factories? Here are the up-to-the-minute answers. Index.

Ages 10-14. January 1984. $10.95*

THE ANIMAL SHELTER

By PATRICIA CURTIS. *B&W photos by David Cupp.* The popular author of *Animal Partners* takes readers inside a typical SPCA shelter, where they learn about the problems its dedicated staff must deal with. Appendices. Index.

Ages 10-14. February 1984. $11.95*

WATER WORLD

By MARY LEE SETTLE. *B&W photos.* Using the gift for language that has made her an award-winning novelist, Mary Lee Settle brings to life the beauty and mystery of the undersea world: its legends, plant and animal life, future exploration. Index. Ages 10-14. February 1984. $10.95*

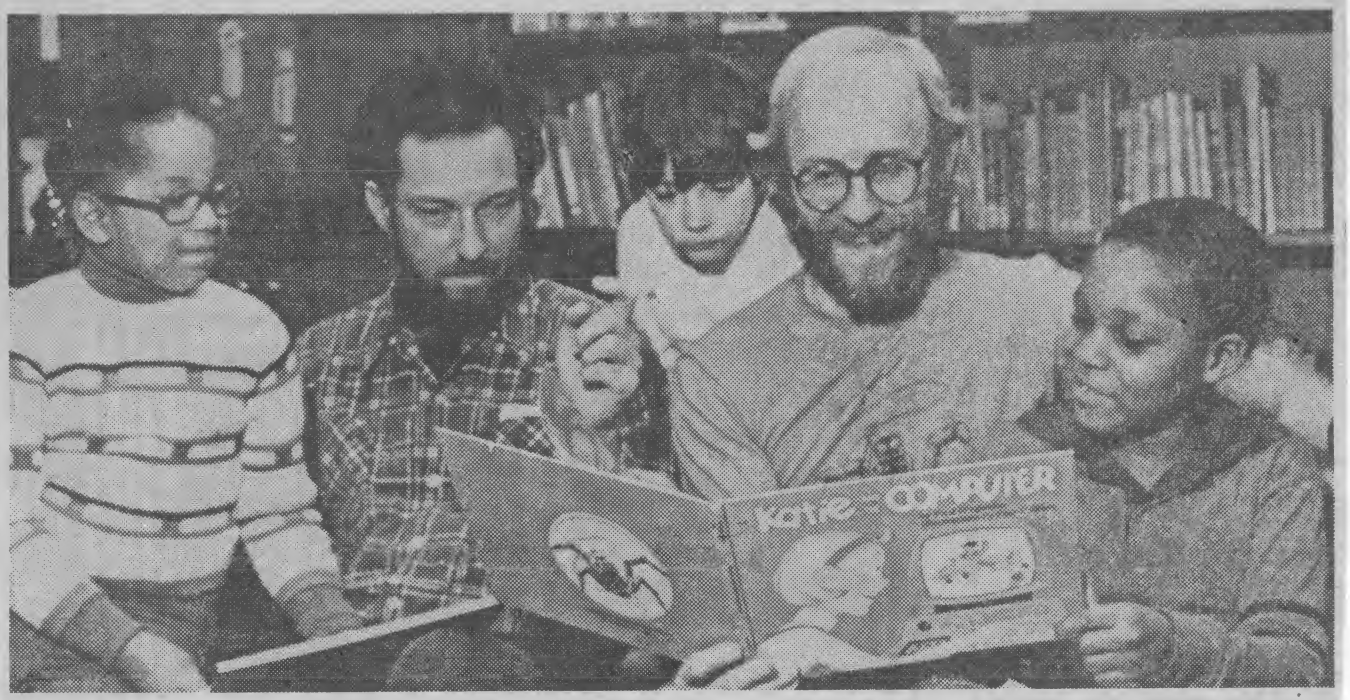
FORGOTTEN ANIMALS The Rehabilitation of Laboratory Primates

By LINDA KOEBNER. *B&W photos.* For young people concerned about the price animals are paying for human progress—an insider's view of changing conditions in today's labs and innovative new rehabilitation techniques. Bibliography. Appendix. Index.

Ages 10-14. March 1984. $10.95*

MYSTERIES OF THE UNIVERSE

By FRANKLYN M. BRANLEY. *B&W photos; diagrams by Sally Bensusen.* The first book in the exciting new "Mysteries of the Universe" series! A well-known science writer poses provocative questions about the universe and



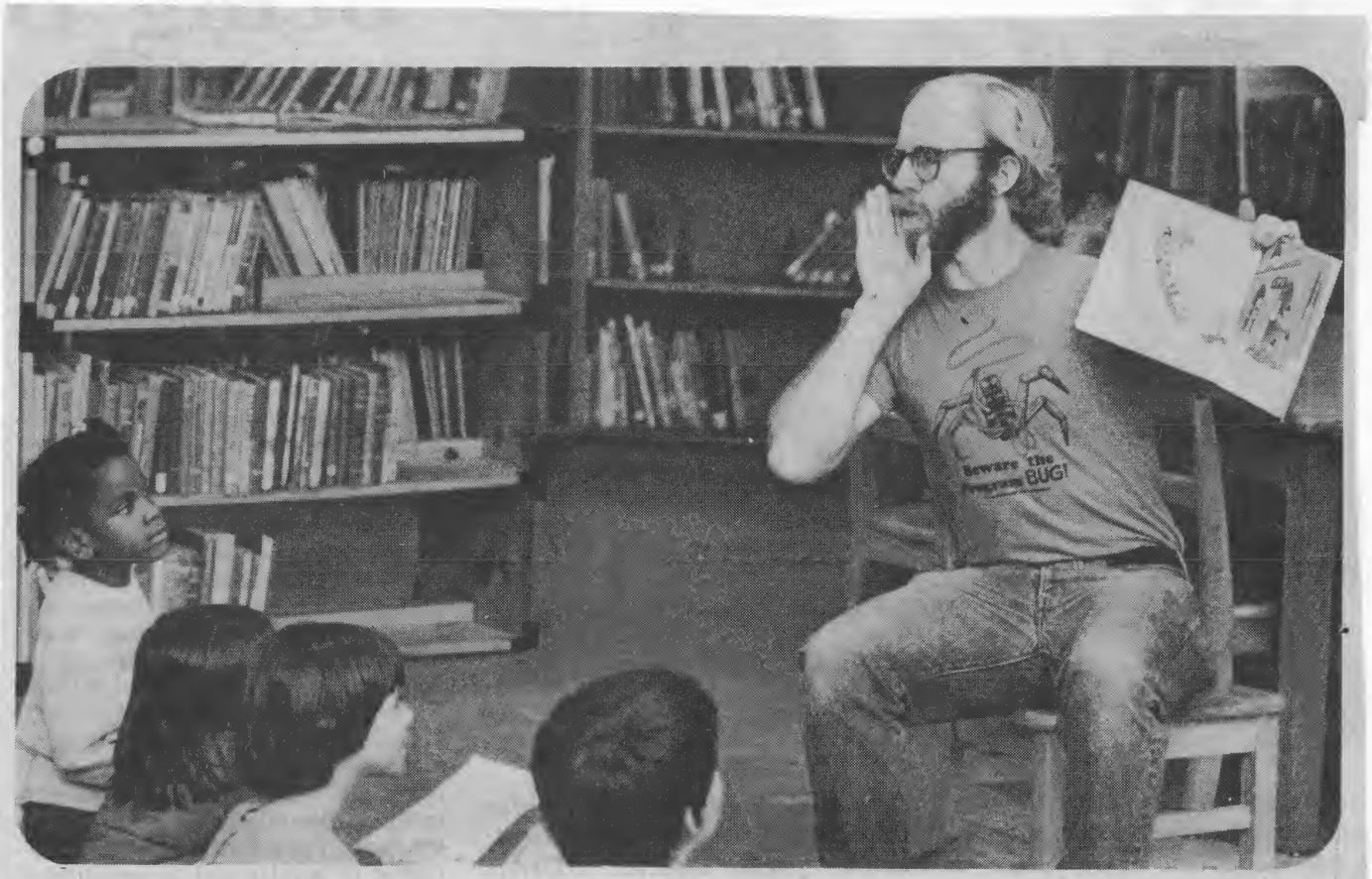
Author, illustrator visit school

Students at R.N. Harris School had a special visit from illustrator Stan Gilliam and author Fred D'Ignazio yesterday during a story hour which featured their book *Katie and the Computer*. Gilliam, second from left, and D'Ignazio, second from right, read the book aloud for Katina Carlton, left, Robby Switzer, center, and David Lee Edgerton Jr., right. D'Ignazio of Chapel Hill, and Gilliam of Kannapolis, will be featured at a signing party from 2 to 5 p.m. Saturday at B. Dalton Bookseller in Northgate Mall.

— Sun Staff Photo by Cooper.

the SUN

Durham, N.C., Wednesday Afternoon, January 23, 1980



TELLING KATIE'S STORY — "Katie and the Computer," a children's fantasy story written by Chapel Hill's Fred D'Ignazio, has just been published by Creative Computing Press. Illustrated by freelance artist Stan Gilliam, the colorful book tells about a little girl's trip inside a home computer. Autographing parties for D'Ignazio and Gilliam are planned for Friday from 7 to 9 p.m. at the Foundation Bookstore at 136 E. Rosemary Street, Saturday from 2 to 5 p.m. at B. Dalton Bookseller in Durham's Northgate Mall and — especially for children with refreshments of cookies and juice — Saturday from 10 a.m. to noon at the Foundation Bookstore. Shown here, D'Ignazio, who is a freelance writer, programmer-analyst and Ph.D. candidate in computer science, tells Katie's story to children in the Estes Hills Elementary School media center. (Danny Moore—CHN)

Fred D'Ignazio Introduces "Katie and the Computer" to Media

Taking time out from autographing books, Fred D'Ignazio gave an animated reading of "Katie and the Computer" for a group of children at the New Leaf bookstore. Fascinated by Katie's fall into the computer and her frantic efforts to find a flower are Amy Masters, Steven Miller and Jennifer Kelly, front row, and Dylan Johnson and Mark Kelly looking over the author's shoulder.

By Joyce M. Ellis
Town Talk Correspondent

Decked out in a Computer Bug T-shirt and a pith hat with a ribbon on the top, Fred D'Ignazio was full of enthusiasm as he autographed copies of "Katie and the Computer." A steady stream of familiar faces filed through the New Leaf Bookstore on Friday and D'Ignazio, computer scientist turned author, was surprised and delighted by the number of people who asked "Do you remember me?"

"I'll never forget our first date," a tall dark-haired lady said, "you really impressed me when you signed the check 'Freddie the Great'. Fred, the author, looked puzzled until she explained that they were both in the second grade at the time and the check was for dinner at the Towne House where his father shared the young man's opinion of himself.

As he autographed a book for one gray haired lady he asked "Is this for your grandchild?" She laughed as she replied "No it's for my 30 year old son" - another second grade classmate.

"Katie and the Computer" is D'Ignazio's first attempt at writing a children's book, but definitely not his last. "I think I've found my niche," he said.

Writing is not new to the 30 year old father of two. In his studies for a Ph.D. at the University of North Carolina, he has published a number of papers with such exciting titles as "A SENIC Project Computer System to Edit Medical Records, Diagnose Community-Acquired and Hospital-Acquired Infections, and Provide Quality Control Reports to Data Collectors."

"Katie and the Computer" with such intriguing characters as the Colonel and the Bug taking Katie on a trip through RAM and ROM is bound to have a much wider audience. D'Ignazio and his artistic Collaborator, Stan Gilliam, already have another book ready for publication in the fall. It introduces computers to older children.

D'Ignazio feels that soon all children will follow in the footsteps of his daughter Katie who, at age 3 1/2, long before kindergarten, learned to type on a home computer.

The early introduction to computers by means of a fact and fantasy book will fascinate adults as well as children and the continuing adventures of Katie are sure to be popular in schools as well as homes.

This writer would like to see D'Ignazio come up with a "bug" spray or perhaps a replica of the Colonel's sword. If either of these had been on the market, this article would have been typed on a home computer named Sam. But somehow the Bug and his bubblegum got into the works.

Fred D'Ignazio Authors Unique Book for Children

"Katie and the Computer," a children's picturebook describing a little girl's adventures inside one of the new home computers, has recently come off the presses and is available for purchase.

Written by Fred D'Ignazio, a resident of Media, Pa. and Chapel Hill, N.C., and illustrated in full color by Stan Gilliam of Kannapolis, N.C.; the book is a new concept in children's picture books. There are no other educational picturebooks on computers for pre-school and early-primary--school children. And, the heroine, Katie, operates on two levels: at the fantasy level, and at the factual, educational level.

The story itself is pure fantasy, enjoyable and entertaining. It has a heroine (Katie), a villain (the Bug), and lots of action and adventures. Yet it also parallels the way a real computer operates. Surrounding the story is factual educational material. In the front is a pictorial outline of the story with copy which explains what is really going on inside the computer during each episode in the story. In the back is more factual material which introduces the reader to the key parts of a modern, personal computer.

The book is about a little girl, who, much like Alice in "Through the Looking Glass," falls through the picture screen of a home computer, and discovers a marvelous world inside. She meets a gruff old soldier known as The Colonel and they begin a series of adventures that take them throughout the computer. At the end, Katie makes a dramatic return to the real world. Also, the stage is set for sequels in which Katie returns to the world inside the computer. The sequels would be modeled after this first book. In each, Katie would have a new set of adventures, and the reader would learn something new about computers.

All the parts taken together are a sandwich of fact and fiction, which can be read together, or separately, at different (3-5) will have a parent or teacher read the story to him. He will mostly appreciate the story for its adventure, but he will also, through questions he asks, and comments made by the adult, pick up a factual and conceptual introduction to computers.

An older child (5-8) will have the story read, or will read it himself. He will enjoy the factual material as well as the story. Adults who read the book to children will also pick up a better understanding of computers. Almost every adult who has read the book has stated that they probably learned more about computers than the kids.

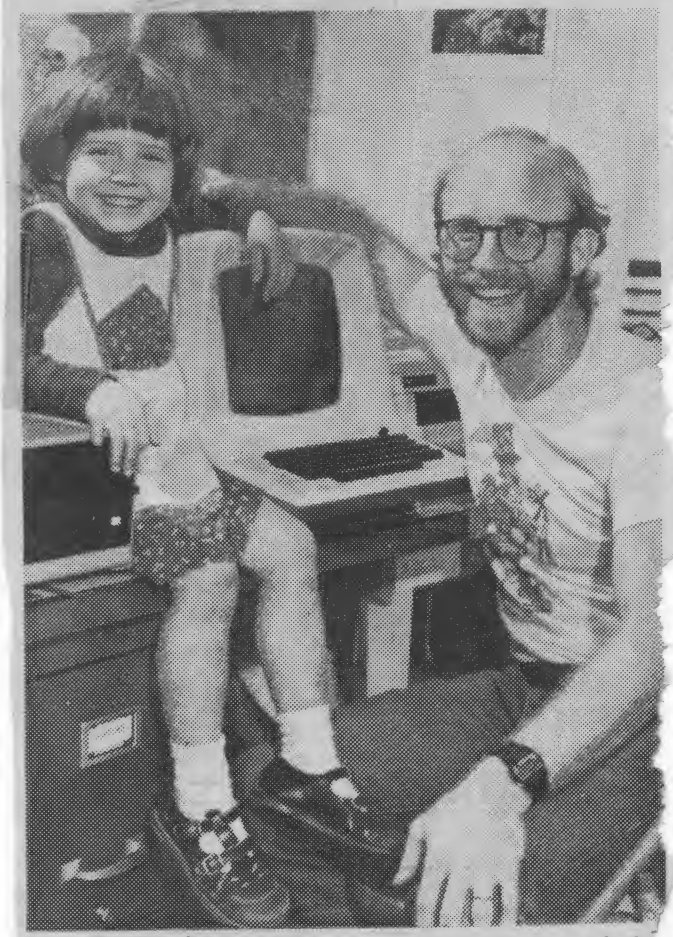
Many computer books are difficult to read, technical, and unavailable to the average reader. "Katie and the Computer" is different: it is easy and fun to read, and it provides a basic introduction to how computers work.

Conceived in early 1978, D'Ignazio hit upon the idea of describing the working of a computer in terms of a fantasy when his little daughter, Catie often crawled up onto his lap to peck at the typewriter - like keys of his own home computer. At the time, D'Ignazio was a computer programmer and spent much of his work time at home.

He is currently a freelance writer, programmer/analyst, and Ph. D. candidate in Computer Science at the University of North Carolina and is a part of the growing movement of computer professionals who want to see computers in the service of people in their home.

"Katie and the Computer" is currently available for purchase from the New Leaf Bookstore in Media. It can also be ordered directly from Creative Computing Press, Morristown, N.J. by calling toll-free 800-631-8112. Book Manager Kathy Sattlethight is handling the orders. Purchase price for

Autograph Party Jan. 11



Catie D'Ignazio is the real heroine of "Katie and the Computer," a unique childrens picturebook written by her father Fred.

Catie D'Ignazio is the real heroine of "Katie and the Computer," a unique childrens picturebook written by her father Fred.

series of adventures that take them throughout the computer. At the end, Katie makes a dramatic return to the real world. Also, the stage is set for sequels in which Katie returns to the world inside the computer. The sequels would be modeled after this first book. In each, Katie would have a new set of adventures, and the reader would learn something new about computers.

All the parts taken together are a sandwich of fact and fiction, which can be read together, or separately, at different levels. A very young child

Science at the University of North Carolina and is a part of the growing movement of computer professionals who want to see computers in the service of people in their home.

"Katie and the Computer" is currently available for purchase from the New Leaf Bookstore in Media. It can also be ordered directly from Creative Computing Press, Morristown, N.J. by calling toll-free 800-631-8112. Book Manager Kathy Sattlethight is handling the orders. Purchase price for "Katie and the Computer" is $6.95.

The New Leaf Bookstore will be holding an autographing party with the author himself on Friday (Jan. 11) from 3 p.m. Children and adults alike are invited and encouraged to attend. There will be a wine and cheese reception for adults from 7 to 9 p.m. and D'Ignazio will also be at the New Leaf from 11 to 3 on Saturday to read to interested children. More information is available by calling 565-7613 or the New Leaf Bookstore at 565-4515.

More than just toys

Computers have educational uses

By TIM PRESTON
Staff Writer

Fred D'Ignazio, a Chapel Hill computer programmer and author, is quite annoyed with the current progress of computers. He's worried that the promise of computer technology is leaning toward the popularity of electronic games, such as Space Invaders, rather than toward educational use.

"It has already been shown that computers are a natural entertainer," said D'Ignazio, a Ph.D. candidate in computer science at UNC. "I see computers very much as an extension of the human mind; they simulate the external environment."

D'Ignazio, who has two small children, wants to swing public attention to the educational and creative possibilities of small computers for children. In March, Doubleday will publish his second book, *The Creative Kid's Guide to Home Computers.*

D'Ignazio's goal, to familiarize the public with computers, is aptly summarized in this excerpt from the first chapter of his book:

Just remember, this book is not a cookbook, it's an idea book. It won't teach you how to program or how to build your own computer. There are already dozens of excellent books that teach you how to do that.

The guide contains, among other things, suggestions for games that children can design programs for, descriptions of robots that have been built by adolescents and programs that make possible computer operation by disabled people. It reflects D'Ignazio's extensive involvement with computers, which are rapidly becoming available to families and school systems.

One might think D'Ignazio eats, sleeps and breathes computers. The den of his home contains a video-display terminal and a print-out machine. All his personal records and programs are stored in the computer.

Last month, D'Ignazio appeared on a segment of "For Your Information" with Stan Gilliam, the illustrator of both of his books, and Bruce Mitchell, a programmer in the University's chemistry department who also is interested in the educational use of computers.

They advocated the use of books, storytelling and audio-visual facilities to introduce children to computers. Mitchell and D'Ignazio gave a similar presentation at the North Carolina Media Council Winter Conference in Fayetteville last Friday.

See COMPUTER on page 2

computer

From page 1

"You've got to give people the image that computers aren't going to destroy kids' intelligence," D'Ignazio said. "In learning to program a computer, skills are developed that enhance creative and educational skills."

"My interest is aimed primarily at education, not games," Mitchell said. "My interest was generated because I had a child with a learning disability."

Working with teachers and with his son, Mitchell designed a program that allowed his son to circumvent his learning disability.

In *Katie and the Computer*, D'Ignazio uses a simple storyline and the drawings of Gilliam, whom he calls "the most important point in information transmission," to introduce computers to children.

The idea for the story was given to D'Ignazio by his wife, Janet, and featured their then 4-year-old daughter, Catie, as the heroine.

For all the time D'Ignazio put into writing and promoting his first book, the financial return has been somewhat less than overwhelming. He and Gilliam have grossed only $550 each for their efforts. D'Ignazio estimated that about $4,000 was spent promoting *Katie and the Computer.*

Despite the small financial returns, D'Ignazio believes the book effort was worthwhile.

"I'm trying every possible medium to make people aware of small computers," he said. "They're exciting, but can be wrongly used and abused.

"I want to create a debate that clears the air and gets people thinking."

Thursday, February 5 1981/The Daily Tar Heel

Book

Local author leads kids into world of computers

KATIE AND THE COMPUTER. By Fred D'Ignazio, illustrated by Stan Gilliam. Creative Computing Press, 39 pp. $6.95.

By FRED PARK

The author, a freelance writer and computer programmer/analyst who lives in Chapel Hill, picked an ideal time to send along a copy of this book to The Leader for a review.

For one thing, the newspaper has recently been endowed with a computerized typesetting system. A book designed to acquaint children with the inner workings of a computer has been soothing, after trying to learn, along with other liberal arts majors, exactly which end is up on a machine which is so new the operating manual hasn't been printed yet.

The arrival of "Katie" is also opportune because my 2½-year-old's favorite book finally fell apart, after it had been thoroughly memorized during more bedtime readings than I care to enumerate. My son is now happily infatuated with heroine Katie, the stalwart Colonel and his nemesis, the Bug.

After several pages it became clear that the local author/illustrator team has other virtues besides good timing.

D'Ignazio took a tried and proven story line, similar to Carroll's "Through the Looking Glass," and successfully moulded it to his purpose -- explaining Bytes, ROMS, and RAMS to children of all ages. This is done with conscious effort to counter the computer's image as an imposing electronic device, understood and controlled by only an elite group. Now that hardware and software are no longer the sole domain of giant corporations, a popular image is due, especially for the first generation to grow up in the world where computers literally are household items.

Katie attempts to reconstruct a flower on her father's new home computer, and falls through the video display terminal into the land of Cybernia. The Colonel, a control program, escorts her through various processes in pursuit of the flower. He is a jolly but firm sort, brandishing a sword and glancing from time to time at his gold pocket watch, to make sure their journey is on schedule.

No literary journey would be complete without peril, and it comes in the form of -- what else -- a bug or bad command. It is portrayed as an enormous monster which stalks the streets of Cybernia, and lassoes Katie and the Colonel in their archaic-looking airplane with a rope made of bubble gum. They are thrown into a loop (repeating commands) until the Colonel deftly cuts the rope with his trusty sword.

Parents will find that very young children will be frightened by this episode, but it is the sort of fear that adds compulsion to the narrative, like the tornado in "The Wizard of Oz." This bug is probably the same spectre which looms in the nightmares of computer analysts who watch Godzilla on the late show and eat pizza for a midnight snack.

Illustrator Gilliam shines in the bug encounter, but it is in the depiction of the actual flower painting where he maximizes color and creativity. Flower painters are summoned from RAM (Random Access Memory) Tower, and load primary colors into huge cannons to blast a salvos of red, blue and green into the Cybernian night sky. The graphics overall are as totally suited to the text as were woodcuts to Carroll's classic.

This book is an outstanding concept and accomplishment by local talent in the leading edge of a home computer movement. Time will only tell if its intent works on my son. For the moment, it is an effective incentive to get him into the tub, pajamas, and bed with great speed.

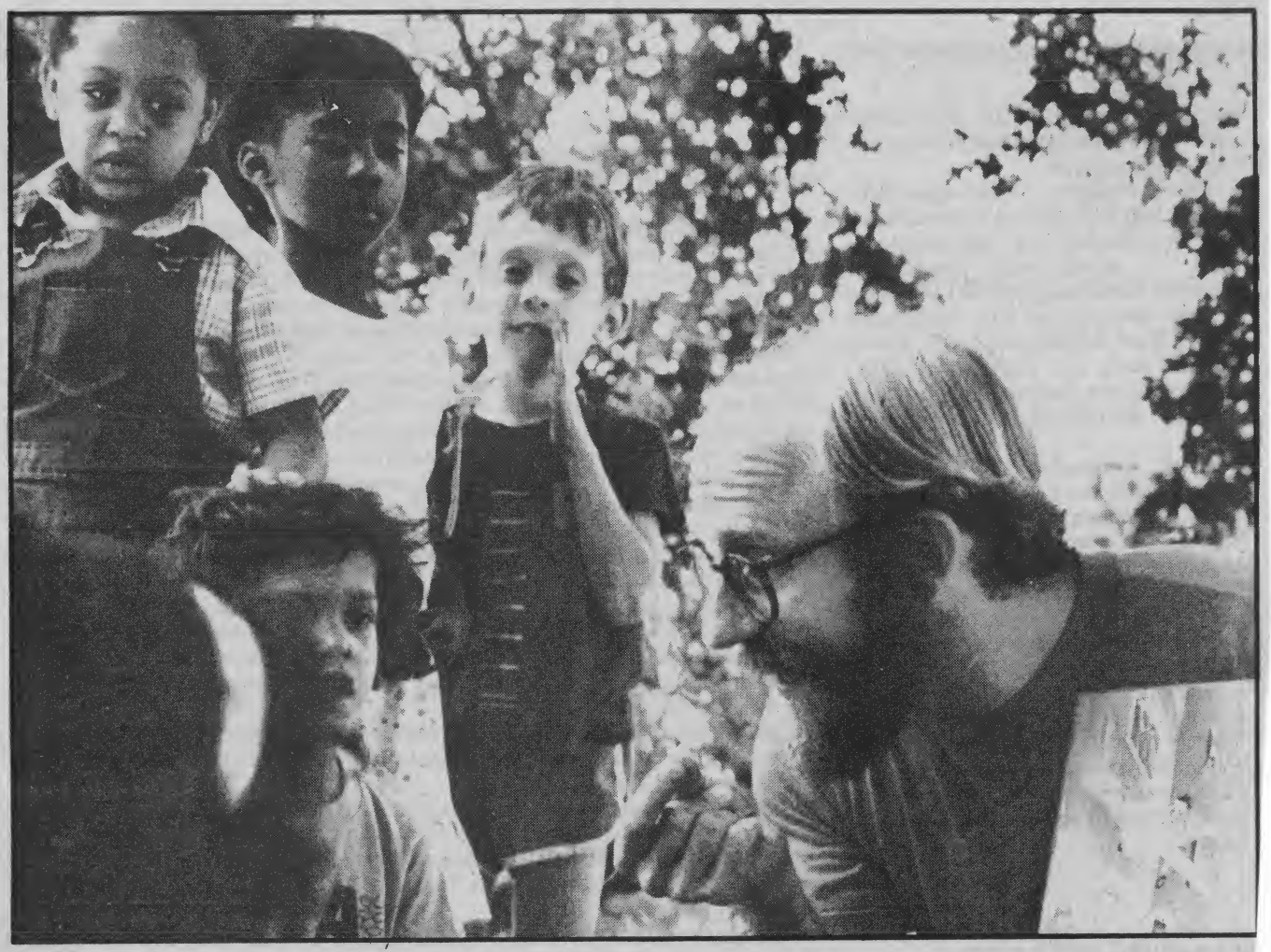
Toward a higher goal, the book teaches the rewards of abosrbing the carefully-written word and anticipating the next page with enthusiasm -- a prerequisite enjoyment to be nurtured in later life by other fine books.

D'Ignazio family gathers around "Ged" the home computer: Catie, age 4, Eric, age 9 months, Janet and Fred. (photo by Chip Hoover).

The Leader

RESEARCH TRIANGLE PARK, N.C.

MARCH 27, 1980



LOCAL AUTHOR GUESTS — Fred D'Ignazio, shown reading his book, Katie and the Computer, to local children, will be the guest author at the Frank Porter Graham book fair from 6 p.m. to 9 p.m. Tuesday. The paperback book sale is open to the public at that time.

The Chapel Hill Newspaper

SUNDAY, APRIL 5, 1981

Editorials/Book & School Pages

Alice in Computerland? Kids' book explores idea

By DINITA JAMES

For a 4-year-old, Catie is quite a heroine.

Her dad, Fred D'Ignazio, published his first children's book in December, with Catie as the protagonist.

Although a bit older and blonde instead of brunette, Katie in *Katie and the Computer* is Catie D'Ignazio.

The Katie in the book even wears Catie's favorite color—red.

D'Ignazio, a Ph.D. candidate in the computer science department at UNC, says he believes computers will come into common use in the home in the not-so-distant future, and children should become familiar with them at an early age.

His book combines educational information and fantasy and the brilliantly colored illustrations of Stan Gilliam, a part-time secretary in the American studies department at UNC.

The Alice-in-Wonderland plot includes Katie as the heroine and a villain, The Bug, in an adventurous tale of Katie's fall through the computer screen into the incredible land inside.

D'Ignazio credits his wife, Janet, who is transportation director of Chapel Hill, with the idea for the story. He says she made an idle remark one day wondering what would happen if Catie fell into their home computer.

From her toddler days, Catie would sit on his lap and type on the computer keys, D'Ignazio says.

As the book developed, D'Ignazio says Catie was his biggest critic. She listened to two versions of the story every night before bed, and memorized the words.

"I had written in a line that read, 'The Bug pulled them closer and closer to his gaping jaws,' but Catie didn't know what the word 'gaping' meant," he says. "One night she recited 'hungry jaws,' and that's how it is in the book."

Catie also had a disagreement with the publisher. D'Ignazio says the publisher urged him to change the spelling of Catie to Katie to insure correct pronunciation.

"She wrote three angry letters to the publisher, with all these ugly pictures," D'Ignazio says. "She though they were changing her name, too.

"We're still having some disagreement now," he says. "Whenever she autographs a book, she spells her name with a K,

Catie, er, Katie and her father will be autographing books at a 7-10 p.m. wine and cheese party Friday and a 10 a.m.-noon children's party Saturday at the Foundation Bookstore.

Dinita James is editor of **Weekender.**

Harold Moore

Catie at computer with father (right) and Gilliam

Inside

Computer Age kids
. . . See page 12

Feature magazine of *The Daily Tar Heel*

'Househusband' turns kids on to comp

By TRISHA COFIELL
Daily Times Staff Writer

MEDIA — Relying on his four-year-old daughter as editorial consultant, and his wife as motivator, Fred D'Ignazio has come up with an innovative children's book on computers.

His book, "Katie and the Computer," is a combined educational and adventure tale about a little girl who falls through the front of a computer much the same way that Alice walked through the looking glass.

Instead of a wonderland, Katie finds computerland.

D'Ignazio, son of Mr. and Mrs. Silvio (Babe) D'Ignazio of Media, patterned his female heroine, Katie, after his four-year-old daughter, Catie. Through a series of adventures with the Colonel (control program), the Bytes (information units) and the computer Bug — Katie learns about the inside of a computer.

D'Ignazio is a doctoral candidate in computer science at the University of North Carolina — thus his expertise in the workings of computers. He also refers to himself as a "house-husband." His wife, Janet, is the breadwinner, and he takes care of the home and two children — thus his expertise in the workings of a young mind.

D'Ignazio said he started to work on the book two years ago on his wife's suggestion.

"We were driving home one night and Janet suggested I start writing. She said Catie was always banging on the keys of my computer, and what if she fell through the computer one day and went inside," D'Ignazio said.

"I was so excited about the idea, we stopped at the Pizza Hut and I began taking notes on the napkins."

EDUCATIONAL

D'Ignazio combined his efforts with those of illustrator Stan Gilliam, and after months of work and research, the two men created "Katie and the Computer." The book was released Friday from the New Leaf Bookstore in Media.

"The story is entertaining plus educational," the author said. "It combines the elements of good versus evil, there is adventure, and there are the facts about computers."

D'Ignazio said he read sections of the book to his daughter as he progressed. Catie would then react, indicating slow parts through boredom, exciting parts by enthusiasm, and rejecting words she could not understand.

"It was really a fun experience and Catie was involved from the very beginning," D'Ignazio said.

The author said computers are becoming a significant factor in modern living, but many people don't understand them and are threatened by the advanced, futuristic technology.

Computers appear in our daily lives in the form of calculators and computer games.

"By the year 2,000, they will be very much around us," he said. "They will be in home appliances, but we won't even see them."

D'Ignazio said he is more oriented towards computers for children, as a learning tool.

"They would be good as a 'what-if' machine. Computers have the ability to simulate reality. They can synthesize music, voices and come up with images," he said. "Computers can help children visualize reality. Instead of stuffy words in a text book, they can make a two-dimensional picture on a computer screen."

D'Ignazio said he also hopes his children's computer book will rub off on the adults who read it.

TOO COMPUTERIZED

"I'm looking for doors to teach people about computers," he said. "There is a danger that we can be too computerized. I'm not in favor of having the computer around as a gimmick, as a 'gee whiz' phenomenon. And I don't think computers should be used as scapegoats (when people blame mistakes on computers.) But they do have a place in our lives."

While "Katie and the Computer" is D'Ignazio's maiden literary effort, he said he is also working on a book on his experience as a house-husband. The projected title is "Coping with Confusion: The Harried House-husband's Guide to Managing the Home."

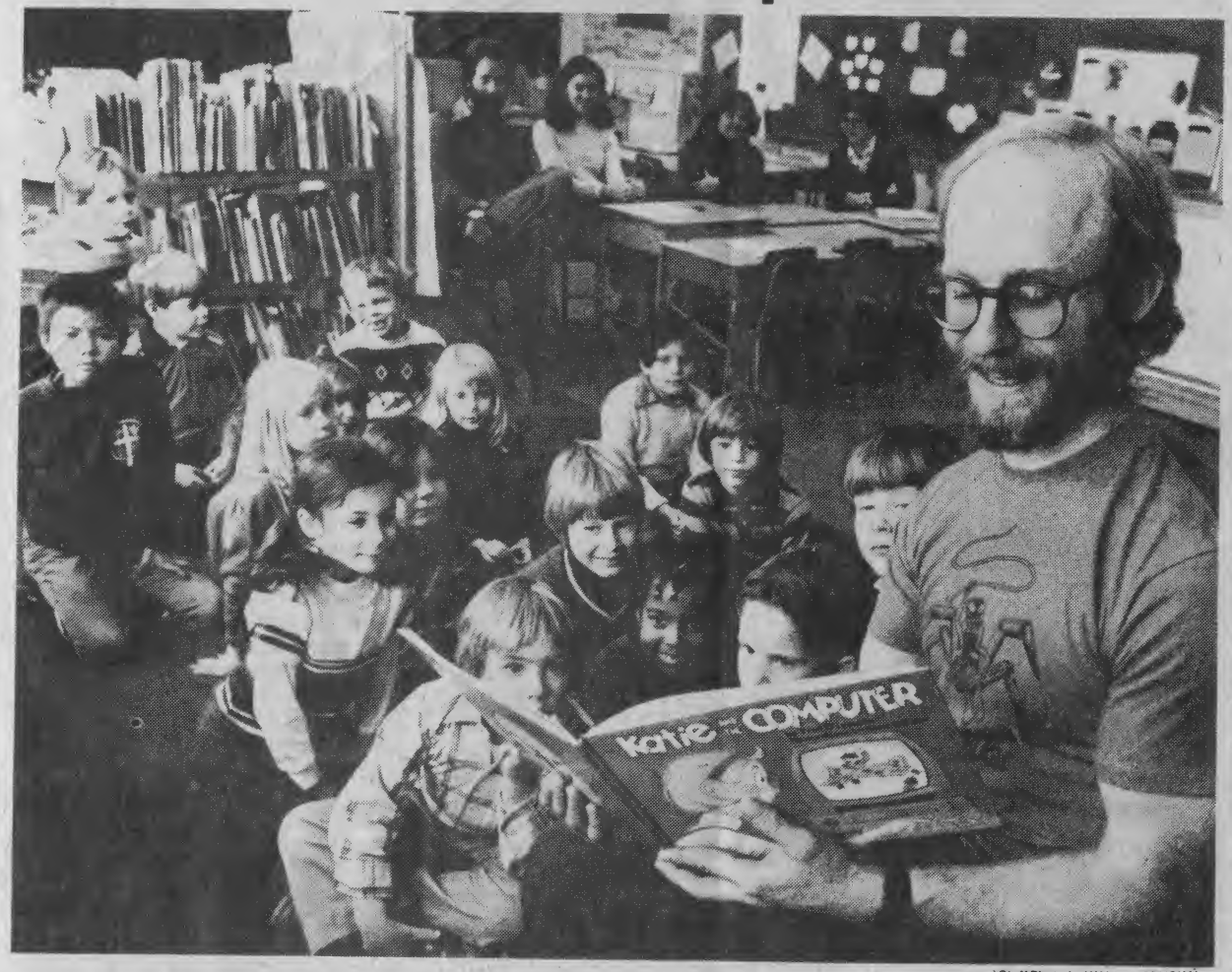
He has also written a book explaining the computer to older children, "The Creative Kids' Guide to Home Computers," and he is planning a book telling consumers how they can be ripped off by computers.

D'Ignazio is a graduate of Nether Providence High School. He also graduated from Brown University and Tufts University. He and his wife, and daughter Katie and son Eric, live in Chapel Hill, N.C.

His book sells for $6.95 and is

Author Fred D'Ignazio reads from his book to Fred Wellington's fi

kids on to computers



Staff Photo by WALT CHERNOKAL

Author Fred D'Ignazio reads from his book to Fred Wellington's first grade class at Swarthmore.

Providence High School. He also graduated from Brown University and Tufts University. He and his wife, and daughter Katie and son Eric, live in Chapel Hill, N.C.

His book sells for $6.95 and is available from the New Leaf Bookstore or Creative Computing Press, Morristown, N.J.

Author charms with computers

By LEE WILDER

Author Fred D'Ignazio of Chapel Hill is riding the crest of growing interest in small computers, and he's smiling all the way.

His writings are aimed particularly at children of all ages, but any age group seems to find fascination and pleasure in exploring the mysteries of home computers and computer games.

Last year, his first book on the subject appeared in January and established a following for his "Katie and the Computer."

Two new books that expand further on the subject came out in March of this year. One, published by Doubleday, is a neatly compiled handbook for youngsters over 12, but it surely will involve the whole family in the almost-magical world of small computer games.

The second book, "Small Computers -- Exploring Their Technology and Future," will be used primarily in classrooms or libraries and points out the potential that awaits like buried treasure within the computer.

If you have always regarded big computers as something mysterious, D'Ignazio has the ability with his enthusiasm and knowledge to change your point of view and to introduce a new element into your life.

He is enrolled now in the computer science department at UNC but confesses that he is most interested in being a writer and educator, to show how the computer can be an educational tool.

D'Ignazio's wife, Janet, and two children, Catie and Eric, live in Chapel Hill in a house filled with computers, including two major computers with video screen and keyboard; two Milton Bradley Big Tracks and a large assortment of computerized games.

Two-year-old Eric is fascinated with the Big Track, which resembles a small grey robot-type tank and can be programmed to do dozens of things.

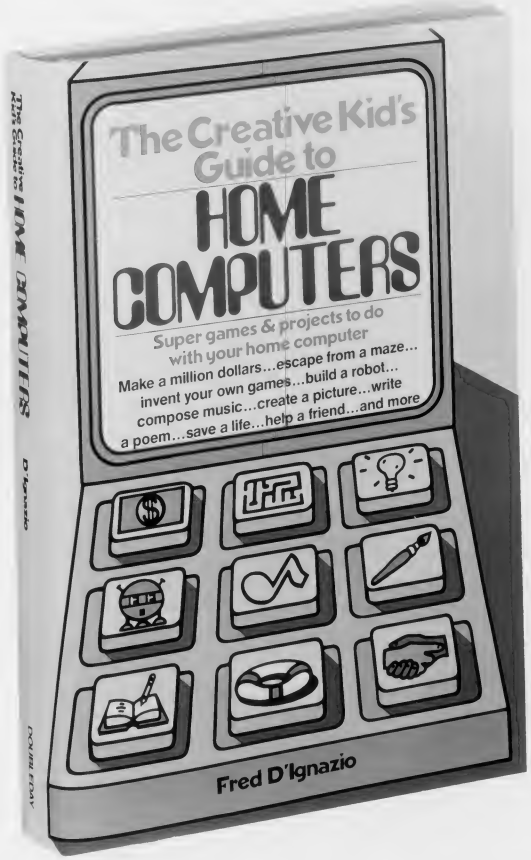
"There's a 40-page instruction book with the Track, and Eric is learning colors and words," says D'Ignazio.

Another new book, "Working Robots," is ready for publication and takes up the phenomenon of real, working robots. These either are computer-controlled or work with a leash cable, rather than being "human" controlled, and they are re-programmable.

D'Ignazio gets a big kick out of robots with sensors, the little devices that give robots limited vision, hearing and touch, as well as the ability to talk.

A friend of his has two robot pet "dogs," that roll around the house under control, whining when they get hungry, at which time they start looking for their "nest," the battery recharger. And, yes, they bark, too, but don't need to be walked.

D'Ignazio has five or six other books in the mill on various subjects and finds he has little time for his favorite pursuit of bicycle riding.



Fred D'Ignazio keeps children spellbound with computer games and enthusiasm.

Children's Bookshelf

By Charlotte Blount

Computers Are for Kids

When it comes to dealing with computers, let the kids do it. Most parents are handicapped to begin with, and grandparents are terminal (no pun intended). Pull the plug on the nay-sayers. The kids know best.

Children sense early and intuitively that computers are fun and as creative as they themselves. Which is another way of saying, "Stand back!"

But if you want the best guide available to enjoying this electronic future with your child, meet Fred D'Ignazio, a computer programmer getting his Ph.D at the University of North Carolina at Chapel Hill. He is already the successful author of several books for children about the exciting possibilities of computers.

When I spent an hour with him some time ago on the little porch of his home, he was bubbling with enthusiasm for what his own 5-year-old daughter, Catie, is doing with the family computer, GED. Art, games, word puzzles, subtle problem-solving, Catie loves it all.

With me, Fred knew he had met a slow learner.

But since I was already excited about his newest book, we proceeded from there — and it made an exciting afternoon.

CREATIVE KIDS' GUIDE TO HOME COMPUTERS. By Fred D'Ignazio. Doubleday. $9.95.

Speaking directly to the reader, the author plunges into the magic phrase that links childhood with the world of science and possibility. "What if...?" Computers are the What If machines. But they are not mystical, threatening robots.

In a hundred brief, succinct pages, D'Ignazio outlines how they work, what to expect and the basics of computer language, the difference between REMS and RAMS, bits and bytes, some of the adventure of games and projects young people can explore.

What makes this book unique?

He writes well, without sci-fi rhapsodies or dreary mathematical applications. He's writing for the average school child, not the teacher or infant genius.

"Have you ever built a model car or airplane? You can use a computer to build models — not out of plastic, wood or glue, but using a picture screen and a light-pen or the keys on a typewriter. A home computer's most outstanding feature is that it gives you the ability to simulate, to create models of the real world. Just remember, this book is not a cookbook, it's an idea book."

This is what I found so intriguing — the author's felicitous technique of arousing interest and clarifying at the same time. The book is specific about products, brand names, and manufacturers. In ample appendices he lists magazines, catalogs, dealers, professional organizations, even practical considerations of cost, space and voltage.

The material is perfectly organized — not a word is wasted. The man's a teacher and scientist. He loves young people and has watched the most ordinary child take off into the excitement and potential of how people and cold hardware can enhance each other.

Yes, there's foolishness and fun aplenty, some of which proves happily that people are better poets than computers.

As D'Ignazio, writer and house-husband, says, "A computer should be just assumed, in family and classroom. It's more than a tool; it can be a planner."

But will the devilish little robots take over, as some parents fear?

"Nonsense. The computer is not intelligent or threatening. It's only a tool, but about the most sophisticated one we have, and today's kids can improve it as well as use it and enjoy it."

This book outlines the possibilities and fun and facts as succinctly as any I've seen. I, even I, understood and am enthusiastic, and I'm a good test case.

A glossary of terms, index, analysis of considerations for purchase, list of catalogs and dealers — all these add to the usefulness for the total family.

Besides, I like the guy. Especially when he says, "After all, a computer's a tool, a machine — not a person. It's people that matter, especially young ones. And they will be controlling computers. They better remember — garbage in, garbage out!"

I like that.

GANNETT

THE NATION'S NEWSPAPER

MONDAY, AUGUST 1, 1983

USA TODAY

VIA SATELLITE

INSIDERS

Author untangles computers, robots for kids and other folks

Fred D'Ignazio's cat, two kids, three robots and 11 computers someday will be joined by a robot pterodactyl "that really flies."

In the meantime, there are the eight books D'Ignazio is publishing this year about computers.

Coming out in October is *How to Get Intimate with Your Computer: Ten Easy Steps to Conquer Your Computer Anxiety.*

Seems D'Ignazio has made a good thing out of computers and robots by teaching people — particularly kids — about both of them.

Take *The Star Wars Question & Answer Book about Computers*, published in May. It is dedicated to D'Ignazio's children — Catie and Eric — but if you're over 8 it might be useful for you, too.

It is written to inform and to reassure. For instance: "Computers are not especially good at acting like real creatures — including toads, dogs, and human beings."

Coming up this month is *Atari Wonderland: 43 Learning Games for Your Atari Computer.* And, in September, you can expect *Computer Games: How to Invent Games of Your Own.*

As for the pterodactyl, D'Ignazio says he'll keep it under his desk when he's writing. Sounds like the ptero might not do much flying.

Reported by Patrick Chu, Michelle Osborn and Deborah Staats

Frank D'Ignazio

Trusty Wheels Bring D'Ignazio From Philly

By ROBERT RUBIN
Staff Writer

Fred D'Ignazio got great gas mileage on his trip to Chapel Hill from Philadelphia.

As a matter of fact, he didn't use gas at all.

D'Ignazio and his bicycle traveled the 548 miles between the City of Brotherly Love and the Southern Part of Heaven in six days.

The trip, which started Saturday, May 27, and ended Thursday night, was a sort of personal challenge to him. "It was an experiment to see if I could pit my body and bike against a road where I was completely alone," D'Ignazio said.

"On a bike you look down at the road," he said. "I feel like I've seen every inch of every mile for 500 miles. I've become an expert on road surfaces."

The trip was made on a ten-speed that carried tools, changes of clothes, food and lots of liquids. D'Ignazio said he slept in cheap motels, ate in all-night diners and got up very early every morning.

The biggest problems he had were dogs and trucks. "I think I know every breed of dog in existance," D'Ignazio said. The problem with trucks was their nasty habit of sucking a biker out into the middle of the road behind them when they passed—leaving him in the path of any cars that might be following.

The people he encountered on the ride were another highlight of the trip. "I was saved by an evangelical Christian in Virginia," D'Ignazio said. He added that the attention people showed him made him feel like a celebrity.

D'Ignazio is now thinking about a trip across America. After that? "I'm really intrigued with the idea of biking the length of the Western Hemisphere," he said. ON YEAH? JANET!!!

KATIE MOVES TO ROANOKE

There's good news for all the fans of Katie and the Computer. Fred D'Ignazio has written two more books in the Katie series! They recount the further adventures of Katie inside the computer, and introduce a new character, her younger brother, Eric. The Computer Parade, an adventure which deals with sound synthesis, will be available in the spring. But we'll have to wait until next fall for The Colonel's Missing Watch, where Katie and Eric help the Colonel regain control over the computer.

There really is a Katie, and she recently moved to Roanoke along with her parents, Fred and Janet, her brother, Eric, and a house full of computers. But when she was two years old she really did (almost) fall into her dad's computer. When Fred was working for the Center for Disease Control at the University of North Carolina, he had a terminal at home. Katie was sitting on Fred's lap while he took a break and lost her balance. She fell against the screen of the terminal and bumped her head. In their efforts to comfort her, Fred and his wife, Janet, tried to compare Katie's computer mishap with Alice's "Looking Glass" experience.

Despite his skepticism, Fred listened to Janet's suggestion that there might be a story inside the computer, just as there had been inside the looking glass. The wonderful result was Katie and the Computer, the story of Katie's adventure inside the computer, where each part of the computer becomes a character. The operating system is portrayed by the Colonel. Other characters include a traffic cop, flower painters, a table manager, and flower bytes.

Fred hasn't limited his writing to family stories. In fact, he's writing a lot!

Upcoming publications include R2D2's Book of Questions and Answers About Computers, Computer Frontiers (about the history of computers), and a series of computer-related mysteries based on the adventures of Chip Mitchell. In the Chip Mitchell books, the reader has a chance to try solving the mystery alone before checking for the correct solution in the back of the book.

Somewhere between his work as a programmer-analyst and his work on a Ph.D. in computer science, Fred realized that writing was lots of fun. His fans are delighted that he did!

FUTURE INSTRUCTIONAL SEMINARS

Teachers and administrators who have bought computers, or who might be considering such a purchase, have a right to expect support in the form of service, software, and instruction. Jack Hartman is committed to providing this support.

We have some ideas of the type of training that you are interested in based on your comments thus far. Here is a list of the seminars we are considering. Tell us what you think of these, and other topics which interest you.

Computer Aided Instruction

Teachers and administrators who are still asking, "How can a computer help my students learn?" should attend this. Software from a variety of disciplines will be demonstrated, with the emphasis on tutorials, simulations, drill and practice, and testing. This subject will be broken down into elementary and secondary levels. 3-6 hours

"Idea Swap" is a column where you can share with others those ideas which have worked for you. Please include in this column any programs which you have written and which you are willing to share with other educators.

The editor of The Micro Messenger is Nancy Healy. She has taught for twelve years in most grades from first to seventh, and is presently teaching English at James Madison Junior High School in Roanoke, Virginia. She has been in the computer education field since 1980, and has taught children, teens, and adults about computers. Her latest venture was as the director of the Computer FUNdamentals Camp at Hollins College this past summer. Nancy will be delighted to hear from any of you about your needs.

This newsletter is designed for you. We want you to be informed and excited about computers in education!

LOGO:
PRESTO PROGRAMMING

What would you call it if you saw a third-grader sitting in front of a microcomputer telling it how to draw pictures on the screen? Computer scientists call it programming; students call it fun; Apple calls it LOGO.

LOGO is the programming language developed by Seymour Papert and his associates in the Artificial Intelligence Lab at M.I.T. in the early 1970's. Children who learned the LOGO language at M.I.T. used a floor-robot shaped like a turtle to draw pictures. They gave this turtle commands like FORWARD, BACK, RIGHT, and LEFT. While the floor turtle turtle on the computer screen to make their drawings.

Two of the main tenets of Papert's philosophy of how people learn contribute to LOGO's success in teaching programming skills and problem-solving skills.

First, students learn most efficiently when they use what they already know to figure out what they don't know. LOGO has a limited vocabulary, which makes it especially well-suited for use with young children. But it is extremely powerful since it allows students to use simple commands to build more complex ones. For example, in drawing a box, the student might start by using these commands to draw the first side of the box and the first corner:

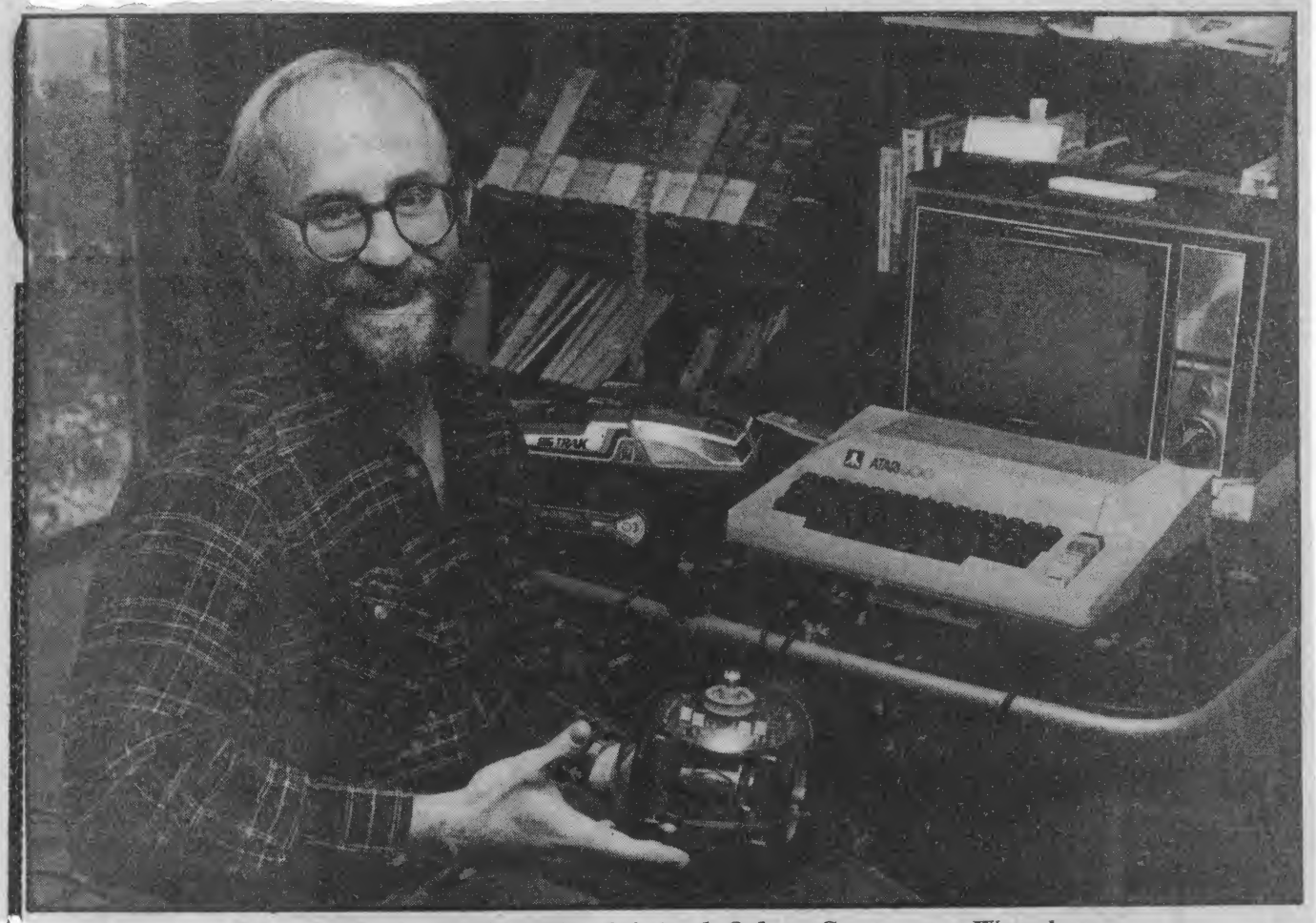
FORWARD 20 (turtle moves forward, drawing a line 20 segments long)
RIGHT 90 (makes a right angle)

To make the other three sides and corners, a student repeats this step 3 more times. This combination of commands can be defined as a new procedure, or command, by giving it a name, perhaps TO BOX. Now that this new command has a name, the student can replace that other set of commands with the single command:

BOX

What can you build from a box? The possibilities for the student's next drawing are limitless! Whatever it is, though, the student now has created a simple command which draws the box.

Papert's second tenet is that of "fixability". A program in LOGO is never wrong. If it does what the student meant for it to do, then it becomes the basis for another more complex drawing. If it contains "bugs", or for some reason does not perform as the student wished, it can be repaired. Each command can be examined individually for



D'Ignazio Shows Off 'Turtle' And Other Computer Wonders

Local Author Says:

Computers, Robots Aid Teaching

By MARY MARKELL
Staff Writer

With computers and robots, classrooms open into another world, allowing students and teachers to experiment and visualize situations they really can't act out.

Elizabethan poetry could become less cumbersome when learned from a "king and queen" on a color computer screen, and chemistry "experiments," can be simulated without expensive chemicals or any worry about students' safety.

Those are just two of many ideas from local author and computer wiz Fred D'Ignazio.

"Words are just symbols, and computers allow you to go through the words," he said, gesturing to part his words like a stage curtain. "You can manipulate the concept personally.

"A child can actually program the computer. It will be completely accurate," D'Ignazio said."

Bruce Mitchell, who designs computer hardware to go with programs D'Ignazio dreams up, also runs a preschool in Durham with his wife. The Mitchells use a minicomputer and set up such experiments and other programs for their students.

Traditionally, teachers have used computers for drills and for record-keeping, D'Ignazio said. "But the most powerful reason to use computers is for simulation."

D'Ignazio and his wife, Janet, heard their daughter, Catie, read for the first time when she was playing a spelling game on a computer.

And their son, Eric, almost two, is learning the alphabet from the typewriter keyboard of the home computer D'Ignazio uses to write.

(Continued on page 6A)

Computers, Robots

(Continued from page 1A)

"Kids can see the universe and learn how it works," using mini-computers, D'Ignazio said. "They can picture stuff and manipulate it. The subject matter is completely unlimited."

Robots are even more of a challenge to kids, making them exercise logical skills, said D'Ignazio, whose next book, "Working Robots," is coming out this fall.

FOR EXAMPLE, a device called a turtle because of its dome shape, could be programmed to draw geometric shapes with a ballpoint pen inserted into its underbelly.

The robot "turtles" can be programmed to wander around the house, and have sensors that make them back away if they bump into anything. "Once I let it go, it's on its own," according to D'Ignazio.

The Massachusetts Institute of Technology (MIT) uses the "turtles" in its learning center for children in teaching complicated mathematics. "They set them for different speeds and change the velocities," D'Ignazio said.

"Programmable robots allow kids to develop some logical skills and clear thinking, which are pretty important. And it's independent learning," he said, picking up a toy tank trunk robot, programming it to go forward, turn around twice and come back.

"Catie, as I was stuttering through the instructions, she just started pushing all the buttons, and figuring it (the robot) out really fast," he said.

"I've got a bug in my program," D'Ignazio said, as he watched the robot back away from him instead of returning. "When the robot does something Catie doesn't expect it to, she laughs. She likes to make it come back right to her feet."

Sometimes, though, the robot tank trunk sends Catie into her father's arms, because she begins to believe the things she imagines it will do. "She says, 'It will bite my toes,' " D'Ignazio said.

ROBOTIC ARMS are at work now in the auto industry, and D'Ignazio's "Working Robots" features a cover photograph of a robotic arm welding a vehicle shell.

Computers with robotic arms play monopoly, chess and other games — with a skill level that challenges even masters. Some are even programmed with remarks, such as "Hurray!" And one chess game has an arm that shakes the player's hand at the end of the game.

D'Ignazio described his next book as a survey that will give youngsters tips on programmable hobby robots, which some children are already building. The book will also talk about where students can go after high school if they want a career in working with robots.

D'Ignazio said "Working Robots" will serve as a general introduction to voice recognition — that is controlling robots by voice commands — and artificial, or programmed, intelligence.

Talking and singing mini-computers are part of D'Ignazio's collection. "The more computers seem like humans, the more fascinating and irrestible they will be," he said.

"Talking and singing are very human characteristics," D'Ignazio said, reaching for a brown case about the size of a cigar box. Inside, a pegboard covered half the box, and number keys from a calculator keyboard along with several one- to two-inch by one-half-inch circuits covered the other half.

Pushing one of the buttons, D'Ignazio got a somewhat nasal voice, one that "doesn't sound worse than a lot of telephone operators." To produce voices, programmers digitize the tones they want, and "compress and compress and compress" the data into a small amount of space. The data is received as voltages, which vibrate the speaker back and forth.

PERHAPS MORE amazing is a singing computer. "Daisy, Daisy," croons a tape recording of a computer — in a voice that sounds human — not great, but human.

Voice recognition computers, D'Ignazio believes, will be able to help you find things. And tiny computer chips the size of your little fingernail, if that big, that can take 70,000 instructions in a second, are part of the new technology.

"If you can't find your glasses when they're on the bedside table or anywhere else, in the future your glasses may have a computer. You may be able to say softly, 'Glasses, where are you.' And your glasses, which may be in the pocket of a T-shirt in the dirty clothes hamper will say, 'Here I am. Here I am.' "

D'Ignazio said his career with computers had its roots in his collecting days before college — when he would gather all the machines he could find. "The computer was sort of like a super machine," he said.

While working toward his master's degree in international relations, a friend suggested he use a computer for his tables analyzing diplomats' comments.

D'Ignazio later became a full-time programmer and troubleshooter. He worked with the Human Resources Division in Washington, D.C., with the Bicentennial Committee. And he worked with the Pentagon — keeping track of equipment.

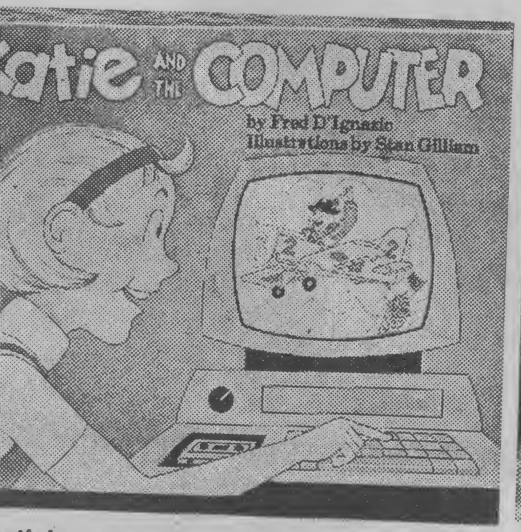
He has had three books published on computers. One, "Katie and the Computer," is named after his daughter and is an Alice in Wonderland-like tale of a little girl who falls through a computer screen.

The idea for "Katie and the Computer" came from his wife, after Catie bumped her nose on a computer screen. But D'Ignazio couldn't figure out how to get his fictional character out of the computer. The ending for the book, illustrated by Stan Gilliam, came to him while driving back from visiting relatives in Pennsylvania.

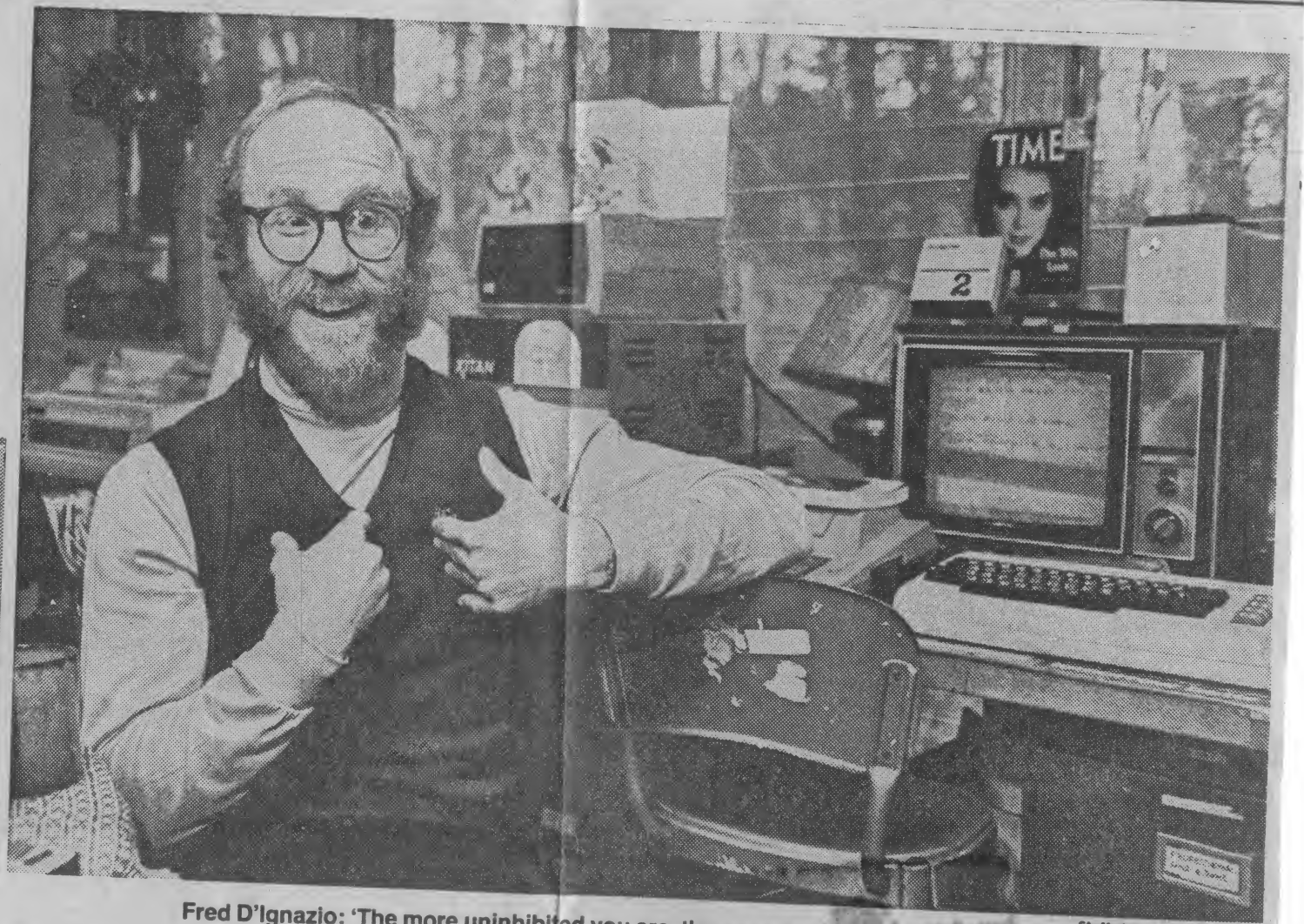
"We drove into a Pizza Hut, and I ran in and grabbed some napkins and started writing. I don't have a very good memory, and I wanted to get it all down before I forgot," D'Ignazio said.

He has written two other books, with a more serious slant, on computers and now has completed "Working Robots."

"In the olden days (two years ago), I would think really hard before doing another draft," said D'Ignazio, an admitted perfectionist. "But now I don't have to worry about that at all. I can say, "That paragraph really doesn't belong at the beginning, hit a few keys and move it to the end with the computer. Now I do five or six drafts."



atie's name is changed for book



Fred D'Ignazio: 'The more uninhibited you are, the more successful you are with kids'

Staff photos by Karen Tam

A chip off the old computer terminal

By JANE A. WELCH
Staff Writer

CHAPEL HILL — Bathed by the glow of television screens and surrounded by beeping sounds, bearded and bespectacled Fred D'Ignazio mixes fantasy and computer facts into books for children, written so even parents can understand.

The fantasy is always based on fact, or probability. Take a silicon chip. "This is just the start, based on the chip," D'Ignazio said, holding a computer chip on his fingertip in his home in Chapel Hill. "It can do a million things, but the state of the art is far beyond that."

Then, with hands waving, D'Ignazio described a future with computers the size of molecules that can do trillions of things. Already some computers have a rudimentary sense of hearing or sight. Some are as intelligent as 5-year-olds. The future can only get better, he said.

It's hard not to catch D'Ignazio's excitement. "The more uninhibited you are, the more successful you are with kids," he said, explaining his enthusiasm. D'Ignazio, author of "Katie and the Computer," has visited area schools with his mock-up of a computer chip. He'll be at the North Carolina Museum of Life and Science in Durham Sunday to talk about computers and autograph books at the museum's Children's Science Book Fair.

D'Ignazio's writing success came more quickly than with most authors. " 'The Computer Killers,' written at about the fourth-grade level, is about these guys who take over an air traffic control tower and keep crashing planes," he said. "It never sold, but it got me my agent."

"Katie" came next. When his daughter, Catie, wanted to know how computers work, D'Ignazio made up a tale about a girl who falls into a computer screen — much like Alice fell into the Looking Glass — and meets a world of Bytes, Bugs and Buzz towers. His wife suggested that he write it down.

That's how the picture book "Katie and the Computer" came into being two years ago. (The publisher, Doubleday, changed the spelling of Catie to Katie; but Catie, now 6, adjusted. She autographs copies of the book as "Katie.") School libraries across the country purchased the book, giving D'Ignazio his most successful book to date.

D'Ignazio dedicates all of his books to his daughter or son, Eric, 2, or his nieces and nephews. "This is a next generation thing," he said.

Early on, in a childhood spent in Media, Pa., D'Ignazio showed promise for what he would become. He loved machines (taking apart his father's office machines) and science fiction.

Computers, though, weren't the everyday tool they are now when D'Iganzio entered college. He didn't even meet one until 1970 while he was working on his senior paper on Chinese-Latin American relations. A friend showed him how the campus computer at Brown University could make sense out of his endless figures. Thus began the love affair between D'Ignazio and computers.

He worked in the Washington area as an editor "The Futurist," a magazine that specialized in planning for the year 2000 and beyond. That was about the time D'Ignazio got a computer terminal for his home.

After the magazine job came a brief stint in the 9-to-5 world as a computer programmer with the Pentagon. "I was counter-culture and definitely out of the mainstream in the basement of the Pentagon," D'Ignazio said. He was in charge of writing the program for distributing soldiers' underwear.

In 1975, D'Ignazio and his wife, Janet, moved to Chapel Hill. Catie soon arrived, and D'Ignazio became a full-time house-husband, a label he uses as proudly as others use Ph.D. D'Ignazio is enrolled in the doctoral program in computer science at the University of North Carolina at Chapel Hill. He might finish someday, he said. Mrs. D'Ignazio is assistant director of transportation for the town of Chapel Hill.

After "Katie and the Computer," D'Ignazio churned out other computer books written for a young perspective. In two years, he has sold 17 books to 10 publishers and appears as a columnist in several computer magazines.

"Yeah, I really am an author," D'Ignazio said as if he can hardly believe it himself. "It's really nice."

D'Ignazio's study, crammed with books, magazines and eight computers, is the neighborhood arcade. Without spending a quarter, neighborhood kids can play any of the 250 games that D'Ignazio programmed himself. Some of the games are pure entertainment; others have a half-hidden educational mission. A simulation game, for example, lets the player pretend that he's a catfish on the bottom of the sea. If the catfish tries to eat a shark, the inevitable happens and the computer asks, "Would you like to be a catfish again?" There's a lesson there somewhere. All games contribute to computer literacy, D'Ignazio said.

D'Ignazio writes for juveniles, but his books are "all written at a level adults can understand." Computers may become the next generation gap if parents don't keep up with their kids, he said.

His next book, expected to come out in the fall, is a series of short stories about the adventures of Chip Whitaker, sort of the computer world's anwer to Encyclopedia Brown. D'Ignazio got his plots straight from current events, from embezzlement stories to the account of the Japanese computer that became the first computer to kill a human being — who happened to hit the wrong button. Thirty years ago, such things would have been science fiction.

"Fantasy," D'Ignazio said, "gradually becomes reality."

• • •

Fred D'Ignazio will lead computer activities and autograph books Sunday from 2 to 4:30 p.m. at the North Carolina Museum of Life and Science, 433 Murray Ave., Durham, as part of the Children's Science Fair.

D'Ignazio, Fred. *Chip Mitchell: The Case of the Stolen Computer Brains;* illus. by Larry Pearson. Dutton, 1983. 82-9608. ISBN 0-525-66790-3. 122p. $8.95.

M
5-6

Using a popular format, D'Ignazio presents a series of puzzlers for which solutions are provided at the back of the book. Each story has Chip and his friends solving problems by using their brains to use the computer. Unfortunately, appealing as the orientation of the book may be, it has two weaknesses: one is that the solution to each problem is not necessarily in the story but may be in the "answer," which is at times a continuation of the story; the second is in the writing style, which is often cute and often unconvincing in details of exposition or dialogue.

Bulletin for Center of Children's Books 4/83

Brosnan

DUTTON

E. P. Dutton
2 Park Avenue
New York, N.Y. 10016

MAY 23'83
20

Mr. Fred D'Ignazio
2117 Carter Road, SW
Roanoke, VA 24015

✓ D'Ignazio, Fred. WORKING ROBOTS; Elsevier/Nelson, 1982. 149p.
RECOMMENDED (8-Adult) 11.50 0-525-66740-7

I learned everything I wanted to know about robots from WORKING ROBOTS. The author stresses the fact that this is an idea book, not a how-to-build-a-robot book. He describes in detail what robots do and how they operate, and he includes material on uses of robots for the future. It has b&w photos and is a good companion book to Robert Malone's THE ROBOT BOOK, which is geared toward browsing. WORKING ROBOTS is very readable and complete, including a glossary, very good index, very complete bibliography for further reading, and a section on materials and schools, all of which make it an excellent choice as a source book for all interested in robotics. Assn. of Children's Librarians Heather Lamb
9/82

Author took a trip into Wonderland — and stayed

By LYNN JALUVKA
Sun Family Scene Editor

CHAPEL HILL — Two of the loves of Fred D'Ignazio's life bumped noses about four years ago, and things in his Chapel Hill home have not been the same since.

In reality, the world of his daughter Catie, then 2, came in contact with her father's world of computers.

She did it through a fantastic journey her father concocted for her — an imaginary trip through the looking glass, the computer screen, and into the works of the instrument.

In the process, D'Ignazio experienced his own personal tumble into the Wonderland of a writer's life. The blend of scientific exploration, fantasy and instruction, it seems, was just what he was looking for.

Since *Katie and the Computer* (the publisher made him change the spelling of the namesake's name) was published in 1979, after a year of brainstorming with Chapel Hill illustrator Stan Gilliam, the 33-year-old author has published six books and contracted to write 18 more.

"CATIE WAS the reason I started this whole thing," D'Ignazio said yesterday in an interview at his home office.

It was on a trip from Pennsylvania, D'Ignazio's home state, that he and his wife Janet came up with the idea.

"My wife asked me, 'How are you going to explain your computer to Catie?'," D'Ignazio recalled.

The idea to write a children's story emerged, and before long, Mrs. D'Ignazio had suggested an *Alice in Wonderland* approach: Let the make-believe Catie lean forward into the computer screen and cross into the world of the computer.

"I thought that was the strangest idea, to have her fall into the computer," D'Ignazio said. "There are all these wires in there. It would be dangerous! She said 'Use your imagination!' "

And he did.

IN THE colorful, hard-cover book, Katie commands her father's home computer to make a flower, then bumps her nose on the glass and falls into Cybernia, the world of the computer.

There she meets the Colonel, the computer counterpart of the white rabbit. The Colonel — a forever charging, sabre-waving man in army boots — tells Katie it is his job to take her order. His real-life equivalent, says D'Ignazio, is the computer program.

Katie's adventure takes her on a swift bobsled ride through snowy, open spaces of the places between the controls and the more densely populated cities of the computer chips. Bits of information — the Bytes — spring to life in the forms of soldiers with letters on their shirt fronts and they all rush, linked together, throughout the world of the computer.

SPEED IS the overriding feeling — "It all happens in the wink of an eye," D'Ignazio says. Katie and the Colonel take buses and planes and parachute rather than land to deliver the information quickly.

But the book's overall message is one of fun and discovery. The Bytes Katie encounters are friendly characters who hold hands to get the job done and are eager to obey her wishes. Her trip with the Colonel is instructive — however rushed — and adventurous. They even encounter a bug in the program, which materializes (of course!) as a giant razor-toothed monster wielding bubblegum lassos who tries to gum up their progress.

Katie is shot back out of the computer world with the burst of color 'paint' that creates the flower she commanded on the terminal screen. The ending is typical *Alice*: She cries out in pain, having bumped her nose on the glass. Did she just imagine it all, or was it for real?

The paint splatters on her pants are the one clue, "our bow to fantasy," D'Ignazio says.

D'IGNAZIO'S OTHER books — *Creative Kids Guide to Home Computers, Small Computers: Their Technology and Future, Working Robots, Electronic Games*, and *The New Astronomy* — address kids fourth grade and up. Just two days ago, he contracted to write his first adult book, and he hopes to maintain a broad readership base in his work.

"I try not to talk down to anyone, whether it's children or adults," he says.

"I LOVE information. When I was growing up, I said, 'I'm not going to be a writer, I'm going to be an information manager."

But if the vibrant illustrations and fantasy are tempered in the books for older kids, the appeal to the imagination is still strong.

D'Ignazio's writing often addresses the reader directly, making him a character in the world of the book. In a series of mysteries he has not yet published, the reader must try to solve the mystery — each one a situation involving the possible assets and problems with having computers in our lives. The answers are in the back.

"I love the mixture of fantasy and reality; I love to teach, especially children. They have such lovely minds. My wife calls my writing 'fiction/non-fiction'."

He writes his books on computer terminals, does his work surrounded by other computer terminals with blipping patterns, to music played by computers.

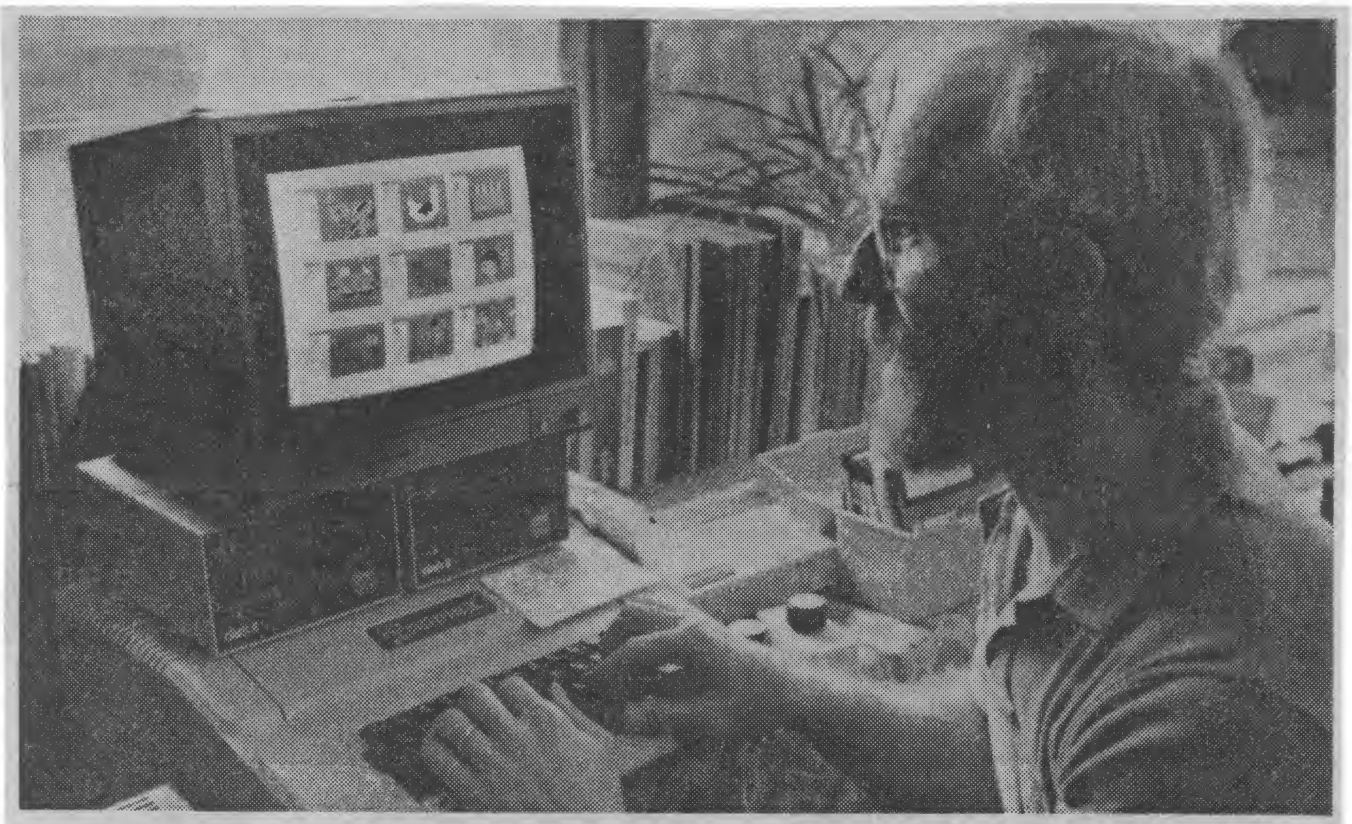
And, he reflects, his interest in computers probably has a lot to do with his quick success.

"MY WRITING has really taken off," said D'Ignazio. "My interest in computers coincided with society's interest. If I'd picked something less hot, it would have made it much harder to sell."

Projections are that some 3 million home computers will be sold in the United States during 1982. In light of that fact, it seems D'Ignazio is among the vanguard of writers who will ease the transition as computers become part of a child's everyday life.

"Who will benefit most from the new home comput-

THE DURHAM SUN
FRIDAY, MARCH 12, 1982



Computer story-telling

Author Fred D'Ignazio demonstrates a home computer that helps his children learn to read. Each image on the screen is a different story. When a child picks one, the computer guides him through it, matching words with pictures and asking the child to respond to questions.

Sun staff photo by Jim Sparks

ers? You will," he tells his young readers in *Creative Kids Guide to Home Computers*. "Many older people still see computers as giant brains with plans to take over the world."

HE IS concerned, the jacket introduction reads, "with introducing the computer to young people as a wonderful tool rather than a forbidding electronic device.

D'Ignazio sees the computer not as a 'giant brain', but as a friend, and robots "even as pets, or assistants. Our images will have to change. Their shape can be anything you want.

"It's going to be a strange world we're going to live in. We're going to have a robot army — the Pentagon is already thinking about it. Of course, we have outerspace robots. We're going to see undersea robots, robots in mines, robots in the home.

"My message to the kids is the excitement of computers, the many faces that computers can wear," he says.

D'IGNAZIO HAS had broad schooling, including pre-medical school training, some law school, a master's in international relations and work towards a doctorate in computer science. He quit work towards the degree when his writing consumed all of his energy.

"I am basically schooled out," he said.

He writes full-time, is there to greet the two children, Catie and 3-year-old Eric, when they come home, and is also assistant editor for *Compute!*, a magazine based in Greensboro.

Despite the relative ease with which he and Gilliam published *Katie*, the work has taken a long time to pay off, D'Ignazio says. It was just this year that his efforts began reaping any financial gain.

"As for financial support, it's all been my wife's doing," said the author. His wife, assistant director of the Chapel Hill transportation department, "said it was like starting a small business — you expect to be in the red for awhile," D'Ignazio said.

"This year's been incredible. I'm going to make a living at it this year."

Booklist
May 15, 1981

D'Ignazio, Fred. Small computers: exploring their technology and future. 1981. 146p. Watts, $8.90 (0-531-04269-3).
CH

D'Ignazio exhibits boundless enthusiasm in his rapid rundown on small computers of the present and future—programmable as well as nonprogrammable, both service- and game-oriented. He explains, in brief, computer hardware, software, and languages and provides tips on selecting a small computer for the future, but concentrates most fully and lovingly on extolling and extrapolating tomorrow's revolutionary computers. He does, however, take time to comment on darker aspects, such as the use of the computer technology in warfare, crime, and "Big Brotherism." Appended material includes lists of magazines and books about small computers, a glossary, and an index. Provocative fodder for a growing junior high and high school–age audience. SE.

001.64'04 [CIP] 80-25094

AUG 1981

The book note below will be published in the ..... issue of The Horn Book, and may be reprinted provided credit is given to HORN BOOK.

COMPUTERS

FRED D'IGNAZIO *The Creative Kid's Guide to Home Computers: Super Games and Projects to Do with Your Home Computer*

CIP 130 pp. Doubleday 1981 ISBN 0-385-15313-9 9.95
Library edition ISBN 0-385-15314-7 10.90
Illustrated with black-and-white photographs and with drawings. (Older)

. . . *Small Computers: Exploring Their Technology and Future*

CIP 148 pp. Watts 1981 ISBN 0-531-04269-3 8.90
Illustrated with black-and-white photographs. (Older)

The author has done a rather remarkable job in producing two such different books on what is basically the same subject. Their titles give a pretty good idea of the distinction: One book contains an interesting and imaginative set of open-ended suggestions for the uses to which these machines can be put by people aware of the powers and limitations of computers; the other book describes these powers and speculates on how they may be refined in the near future. There is, of course, some overlapping of information but not enough to make either book redundant.

As a science-fiction enthusiast I am not surprised at D'Ignazio's view of the future, but I was startled several times to learn how soon in the future, some of the computer achievements may come. Mere improvement of speed is, of course, to be expected, but I had not any real idea of where we were going, or how fast, in graphics and in musical applications — to name only two of the items discussed in the books. No doubt they will become dated quite soon, especially if the author is right in his predictions; but in the meantime both are worth having. In addition to the carefully researched text, both have indexes, glossaries, and extensive bibliographies of books and periodicals. *The Creative Kid's Guide* also lists a number of catalogs of suppliers of books and equipment, which should help to prolong its usefulness.

World Of Books

by Charles Horton

Book Editor

KATIE

If most 3-year-old girls were riding along in the car with their daddies on a long drive from Philadelphia and asked them "What would happen if I fell into a computer?" about the only thing they would get would be an impatient stare.

Not only did Catie D'Ignazio, whose father, Fred, is a computer analyst, get an answer, she got a 42-page book explaining the whole exciting journey to the land of Cybernia.

KATIE AND THE COMPUTER (Creative Computing Press, Morristown, N.J. $6.95), with a text by Fred D'Ignazio and illustrations by Stan Gilliam, was published last month and has already taken off in sales like an uncontrolled computer printout.

At the insistence of the publishers Catie got her name changed to Katie, but that seems a small price to pay for having helped inspire such an imaginative and beautifully conceived children's story that introduces two characters — the Colonel and the Bug — who already seem to have been classic children's storybook characters for generations.

Perhaps so much of the freshness in "Katie and the Computer" is due to the fact that neither D'Ignazio nor Gilliam had written or illustrated a book before. They brought to the project new ideas, innovative plot lines, new characters and an original style of drawing to bring it to life.

The backgrounds of both D'Ignazio and Gillman are about as unlikely to have produced a children's book as one can imagine.

Danny Moore—CHN

Illustrator Gilliam (l) And Author D'Ignazio

D'Ignazio, a native of Media, Pa., received an undergraduate degree in International Relations from Brown University and an M.A. from the Fletcher School of Tufts University. Following that he attended law school at American University for two years, after which he accepted a position with Computer Sciences Corporation in Washington, D.C. In 1975 D'Ignazio came to Chapel Hill to work with the UNC Department of Biostatistics and to earn a Ph.D.

Gillman is a native of Kannapolis who received his MFA in art from UNC-Greensboro. From 1972 to 1975 he taught art at Livingstone College in Salisbury. After that he moved to Chapel Hill where he does freelance art work and is a secretary in UNC's American Studies Curriculum.

While the publishers seemed sure that the Colonel would become the favorite character in "Katie and the Computer," school children who have read the book have given their resounding vote to the Bug, who is fast becoming the most popular character in Chapel Hill.

But anyone who has ever received five wrong billings in a row from a computer knows perfectly well that it is the Program Bug that dominates the world of computers and certainly deserves to dominate the world of Katie's computer.

After reading or having someone read to them "Katie and the Computer," thousands of children all over the country are likely to exclaim what Katie says on the last page of the book, after her exciting visit to the Land of Cybernia: "And I want to go back real soon!"

The Colonel And The Bug, New 'Classic' Character

Of Books

rles Horton
k Editor

Danny Moore—CHN

l) And Author D'Ignazio

to earn a Ph.D.

Gillman is a native of Kannapolis who received his MFA in art from UNC-Greensboro. From 1972 to 1975 he taught art at Livingstone College in Salisbury. After that he moved to Chapel Hill where he does freelance art work and is a secretary in UNC's American Studies Curriculum.

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The Colonel And The Bug, New 'Classic' Characters From 'Katie And The Computer'

Book fair puts science within reach of children

How do you describe to a child the height and breadth of a dinosaur, or the invisibility of an atom?

One way is to take him to a museum: Others are to take him to the library or buy him a good book.

This month's Children's Science Book Fair at the N.C. Museum of Life and Science offers an opportunity to do all three while it brings ideas to life with demonstrations and meetings with local authors.

Books on robots, animals, experiments, engines and dinosaurs — "a perennial favorite" — are among the books kids ask for most at the children's department at Durham County Library, department head Kay Taylor says.

They're all among the more than 100 books on display at the fair, which is being jointly sponsored by the museum, the Durham County Library and Friends of the Durham County Library.

Many of the books, displayed against a background of artwork by city and county school students, are for sale. Others are on loan from the library.

The fair is bigger than the one held two years ago, which was a rented exhibit, said Christine Manda, assistant education coordinator at the museum.

"This year we decided on our own books and worked through a local and a South Carolina distributor to get them," Manda said. "We tried to get low- to-medium cost books and paperbacks."

Complementing the daily displays are theme weekends packed with activities.

Despite rainy weather and the ACC basketball tournament, turnout was good for the kick-off weekend, Manda said. Kids learned about North Carolina wetlands and dinosaurs and met with William Service, an Efland man who has recently published *Dinosaurs*.

Along with good weather, better crowds are forecast for this weekend's "Creative Computing" program. It will feature computer demonstrations Friday and Saturday and computer activities led by Fred D'Ignazio, a local author of two children's books on computers, on Sunday (see related story below).

"Supermarket of Science" is the theme for March 19-23, when children may experiment with mirrors, straws, magnets and other learning tools while they browse.

And the fair is not just for kids. A reception intended to let teachers and librarians explore science resource books is set for Sunday.

Wrapping up the book fair March 26-27 will be a demonstration of Starlab, a portable planetarium, a rocket building workshop and rocket launching.

The books are on display daily through March 28. Hours are 10 a.m.-5 p.m. Monday-Saturday and 1 p.m.-5 p.m. Sunday. They can be bought during sale hours, which are listed in the calendar below.

CREATIVE COMPUTING, MARCH 12-18

FRIDAY: Apple II computer demonstration, 3:30 p.m. Books available for purchase, 1-4 p.m.

SATURDAY: Computer companies demonstrate products and let you test your skills, 11 a.m.-4 p.m. Books available for purchase, 1-4 p.m.

SUNDAY: Fred D'Ignazio leads computer activities and autographs his books, 2-4:30 p.m.

THURSDAY: Books available for purchase, 10:30 a.m.-12 noon.

SUPERMARKET OF SCIENCE, MARCH 19-23

FRIDAY: Experiment with mirrors, straws, magnets and browse, 3:30 p.m.

SATURDAY: Books available for purchase, 1-4 p.m.

SUNDAY: Reception for teachers and librarians, 2-4 p.m. Books available for purchase, 1-4 p.m.

TUESDAY: Books available for purchase, 10:30 a.m.-12 noon.

ROCKET TO THE MOON MARCH 26-28

FRIDAY: Starlab demonstration, 3:30 p.m.

SATURDAY: Rocket building workshop (registration required), 10 a.m.-12 noon. Rocket launching, 1:30 p.m. Starlab demonstration, 3:30 p.m. Books available for purchase, 1-4 p.m.

SUNDAY: Rocket launching, 1:30 p.m. Starlab demonstration, 3:30 p.m. Books available for purchase, 1-4 p.m.

— By LYNN JALUVKA

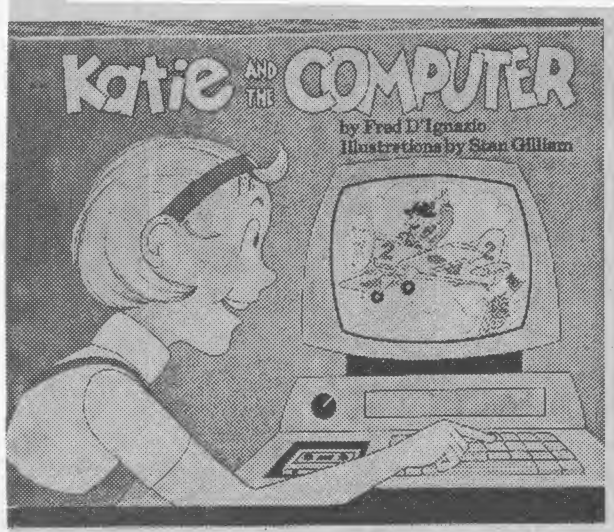
the SUN

FAMILY SCENE

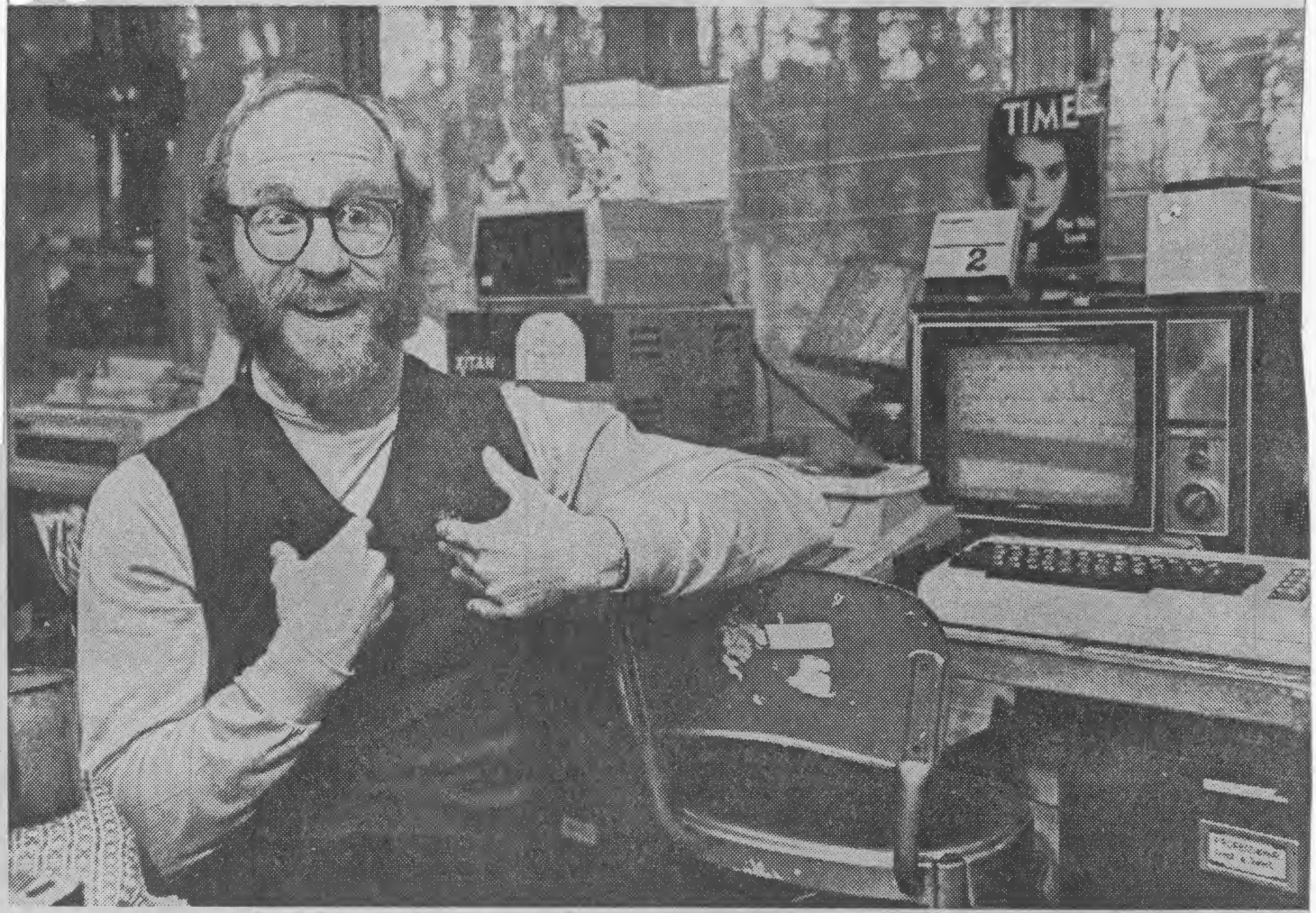
SECTION B

Friday, March 12, 1982

The News and Observer
People
Tuesday, March 9, 1982, Raleigh, N.C.
Lifestyles/Personalities/Activities

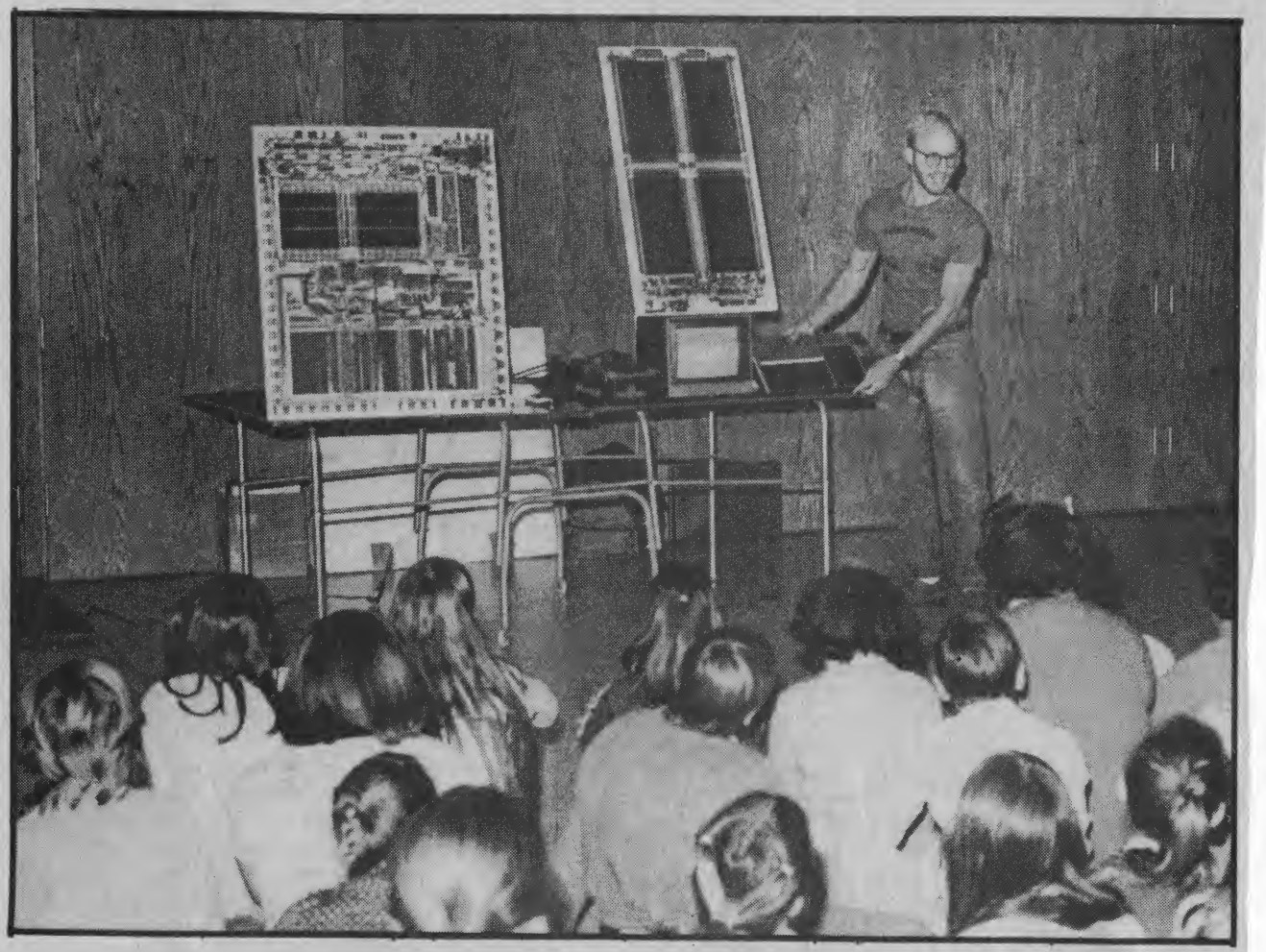


Catie's name is changed for book



Staff photos by Karen Tam

Fred D'Ignazio: 'The more uninhibited you are, the more successful you are with kids'.



EARLY START — Students at Seawell Elementary School are learning about assorted careers available to them in Career Awareness Month at the school. Here, Fred D'Ignazio, author of "Katie and the Computer," tells a class about computers. Students are learning about careers through speakers, drawing pictures and role-playing in the classroom. Sonna Loewenthal, Chapel Hill assistant town manager, was another speaker recently. (Alex Webb—CHN)

Computer becomes kids' stuff

Scientist publishes a children's fantasy

By SUZANNE GORDON
Of The Bulletin Staff

Fred D'Ignazio has a vivid memory of what it's like to be put to work as a child.

He recalls growing up around his father's Media restaurant, D'Ignazio's Towne House. He said he started washing dishes when he was old enough to reach the sink.

But Babe and Libby D'Ignazio's 33-year-old son didn't take up the restaurant business. He became a computer scientist instead.

And now he's combined that with a long-time penchant for writing and an interest in children's literature to create "Katie and the Computer," a newly published children's fantasy.

What would happen if you fell into one of those strange-looking television screens, that are the modern-day computer terminals?

Katie can tell you all about it.

She's a little girl, fashioned after Catie, D'Ignazio's 4-year-old daughter, who was very excited when the home computer her father ordered arrived at their house in Chapel Hill, N.C. The D'Ignazios also have a son,

Please Turn to Page 3

Bulletin Photo by Robert L. Fox

Fred D'Ignazio autographs a copy of his book for nine-year-old Carolyn Thomas.

The Bulletin Sunday, Jan. 13, 1980

Scientist turns a computer into a fantasy for children

Continued From First Page

Eric, 9 months.

"Since she was three months old, Catie would sit down in my lap and fiddle with the keys. She would try to leap forward and my wife said, 'What if she went right through and went tumbling in like Alice and Wonderland?' " he said.

From that seed of an idea planted by his wife, the former Janet Letts, a transportation planner in Chapel Hill, evolved the book. And it may have opened a new career for D'Ignazio, who is working on his doctoral degree in computer science at the University of North Carolina. He cooperated on the book with artist Stan Gilliam.

D'Ignazio and his book, published by Creative Computing Press of Morristown, N.J., are back home in Media, where they attended an "autograph party" Friday afternoon at the New Leaf Bookstore, 23 S. Jackson st.

D'Ignazio calls himself "pro-computer," but says they are "missued constantly."

D'Ignazio said he wants to introduce kids to computers at an early age.

"Let's give them a quick start," he said. "They will be in the home and they are a part of everyone's life."

Using a hero, a villain, and a colorful adventure inside the computer, starring a multi-legged "Bug," D'Ignazio also tells how a computer works. The bug actually is the part of the computer that causes the problems, and messes up people's lives.

Now that Katie has been published, he's writing "That's Not My Bill — The Angry Consumer's Guide to the Computer."

The real Catie launched her own version of a protest against the publishers when they changed her name in the book to begin with a "K" rather than a "C."

"She wrote three angry letters. She thought they were changing her name too," he said.

But Catie was his best editor and best listener.

"Every night we have 'dark stories' and I have to think up two stories," he said. For months, she got two new versions of Katie and the Computer at bedtime.

That way, he could test out words on his daughter, and find out exactly which ones would have the best results with his young readers.

D'IGNAZIO.....for running head only

D'IGNAZIO, Fred(erick) 1949-

PERSONAL: Surname is pronounced Dig-*nay*-zee-oh; born January 6, 1949, in Bryn Mawr, Pa.; son of Silvio Frederick, Jr. (a restaurateur) and Elizabeth (McComas) D'Ignazio; married Janet Letts (an urban transit systems manager), September 5, 1969; children: Catherine Shum, Frederick Letts. *Education:* Brown University, B.A., 1970; Tufts University, M.A., 1971; attended American University, Washington School of Law, 1971-72; graduate study at University of North Carolina at Chapel Hill, 1975—. *Home and office:* 2117 Carter Rd. S.W., Roanoke, Va. 24015. *Agent:* Steven J. Axelrod, Axelrod Agency, 126 Fifth Ave., New York, N.Y. 10011.

CAREER: Analyst for Management Systems Corp., 1973; *The Futurist*, Washington, D.C., assistant editor, 1973-74; Computer Sciences Corp., Washington, D.C., systems analyst and programmer, 1974-76; University of North Carolina at Chapel Hill, assistant director of SENIC Project (a major hospital study for biostatistics department), 1976-77; writer, 1978—. Program director for The Institute, 1971-74. Instructor in computer courses in primary and secondary schools and in adult continuing education courses, 1974—. Analyst for John Hamburg & Associates, 1976-77. Member of educational advisory board of Terrapin, Inc., 1981—; member of advisory board of Tar Heel Computer Camp, 1982—.

Panelist on television programs "Profiles in Computer Education" and "Home Learning: Using Computers," Public Broadcasting Service (PBS), 1983; appears weekly on "Good Morning, America," ABC-TV, 1983—. Member of Children's Fantasy Panel at World Fantasy Convention, 1983. Public speaker on educational computing in the classroom and the home, careers in computing, and computers in the schools. Consultant to Children's Television Workshop, *Consumer Guide*, *Enter*, Tomy Corp. (toy manufacturer), and E. P. Dutton's Electronic Publishing Division. Adviser to British Government on robotics curriculum in English schools. Lecturer at International Robotics literacy course, London, England, 1983. *Awards, honors:* Fellowship to Brazil from Brazilian International Relations Institute, 1970; fellowship to Portugal from Gulbenkian Foundation, 1971; grant from National Science Foundation, 1974.

WRITINGS—For children: "The World Inside the Computer" series, Creative Computing, Volume I: *Katie and the Computer* (North Carolina Book Club selection), illustrations by Stan Gilliam, 1979, Volume II: *The Computer Parade*, 1983, Volume III: *The Colonel's Missing Watch*, 1984; *The Creative Kid's Guide to Home Computers: Super Games and Projects to Do With Your Home Computer*, Doubleday, 1981; *Small Computers: Exploring Their Technology and Future*, F. Watts, 1981; *Working Robots*, Elsevier-Dutton, 1982; *Electronic Games*, F. Watts, 1982; *The New Astronomy: Exploring the Secrets of Space*, F. Watts, 1982; (with Helicon Software Co.) *Chip Mitchell: The Goblin Burglar and Other Mysteries* (computer disk; solve-it-yourself interactive computer mystery adventure games), Dutton, 1983; *Chip Mitchell Solve-It-Yourself Computer Mysteries*, Lodestar Books, Volume I: *The Case of the Stolen Computer Brains*, 1983, Volume II: *The Case of the Robot Warriors*, 1983, Volume III: *The Case of the Chocolate-Covered Bugs*, 1984.

The Star Wars Question and Answer Book About Computers, Random House, 1983; *Messner's Introduction to the Computer* (textbook), Messner, 1983; *Invent Your Own Computer Games*, F. Watts, 1983; *There's a Creature in Your Atari*, Compute! Publications, 1983; *Science of Artificial Intelligence*, F. Watts, 1983.

For adults: *Computing With Little Kids*, Compute! Publications, 1983; *How to Get Intimate With Your Computer: A Ten-Step Program for Relieving Computer Anxiety*, McGraw, 1983; *Put Your Computer to Work: Building Creative Family Tools From Scratch*, McGraw/BYTE Books, 1983.

Computer instructional guides; all published by Hayden: *Atari in Wonderland*, 1983; *Atari Playground*, 1983; *Commodore 64 in Wonderland*, 1983; *Commodore 64 Playground*, 1983; *TI in Wonderland*, 1983; *TI Playground*, 1983; *VIC in Wonderland*, 1983; *VIC Playground*, 1983; *Apple in Wonderland*, 1984; *Apple Playground*, 1984.

Associate editor of *Compute!*, 1982—, and of *Compute!'s Gazette*, 1983—; contributing editor of *Turtle News*, 1981-83, and *Enter*, 1983—; columnist for *Softside*, *Compute!*, and *Turtle News*; contributor to *PC World* and *Highlights for Children*; contributor of reviews to *AAAS Science Books and Films* and *Science Fiction and Fantasy Book Review*; contributor to periodicals, including *Computers and Video Games* and *London Times Education Supplement*.

WORK IN PROGRESS: "Electronic Katie and the Computer," a series "for young children (preschool to grade 3)."

SIDELIGHTS: Fred D'Ignazio told *CA:* "I love kids, books, fantasy, robots, and computers, and I love to put them all together in a bubbling stew. I have eighteen computers set up in my house, and I run a free, informal computer games arcade and programming lab for neighborhood kids. I also have a lending library for local kids to borrow books—books are everywhere. Little robots run around on the floor of my home, firing laser cannons, turning somersaults, talking ('my best wishes to everybody!'), and beeping (a little robot turtle). Dragons are everywhere—on the radiator and tucked in among the books. In my presentations I take kids on an imaginary voyage to the microscopic world inside the computer.

"I speak at day-care facilities, schools, conventions, computer camps, and on radio and TV about computer careers and about getting kids started computing and building robots. Computers are not just glorified adding machines. They are the most important new medium for human communication and imaginative expression. You can use them to invent electronic stories, words, pictures, movies, music, etc. Kids and adults need to become computer literate. Like any technology, computers can do much harm as well as great good. The more everyone knows about them, the better."

BIOGRAPHICAL/CRITICAL SOURCES: Delaware County Daily Times, January 15, 1980; *Daily Tar Heel*, January 24, 1980; *Chapel Hill Newspaper*, January 24, 1980, March 8, 1981; *Winston-Salem Journal*, October 18, 1981; *News and Observer*, March 9, 1982; *Durham Sun*, March 12, 1982.

* * *

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RECOMMENDED 6/3/83

D'Ignazio, Fred. *Working Robots.* New York: Elsevier/Nelson Books. 149 p. $11.17 ISBN 0-525-66740-7 81-17279

Presents for the robot enthusiast an overview of the various kinds of working robots, or intelligent machines, and their growing impact on the economy and society. (Gr 7-9) Library of Congress

Brady, Irene. Wild mouse. 1976. Scribner, $6.95.

Gr. 2–4. A special, personalized glimpse of a wild white-footed mouse.

British Museum. Life before birth: the story of the first nine months. 1979. Cambridge, $7.95.

Gr. 3–6. Adapted from a slide/sound program at the British Museum, this follows the development of a fetus from conception to birth.

Cobb, Vicki. How to really fool yourself. 1981. Harper, $9.89; paper, $4.95.

Gr. 5–7. The senses can't always be relied upon; proof is offered in this eclectic grab bag of activities that link fun to scientific fact.

Cobb, Vicki. The secret life of hai 1982. Lippincott; dist. by Harper, $

Gr. 5–8. Soaps, polishes, paints, a h a saw—who would think they're the s instructive, entertaining science les

Cobb, Vicki. The secret life of sch supplies. 1981. Lippincott; dist. by Harper, $9.13.

Gr. 5–8. Commonplace school suppl as paper, pencils, pens, paste, and er the basis for some fascinating science tion.

Cole, Joanna. Cars and how they 1983. Harper/Crowell, $9.57.

Gr. 2–4. A good-looking, effective book explanation of how a car work

Cole, Joanna. A chick hatches. 1 Morrow, $8.59.

Gr. 3–5. Prime scientific writing and raphy display the development of from fertilization to the end of its thr incubation.

Cole, Joanna. A frog's body. 1980. Morrow, $7.75.

Gr. 3–5. Arresting photographs and a clear text highlight this first-rate introduction to a frog's natural engineering.

D'Ignazio, Fred. Working robots. 1982. Lodestar; dist. by Dutton, $11.17.

Gr. 6–8. Aimed at the robot enthusiast rather than the casual reader, this offers a varied look at the many tasks robots perform today.

Epstein, Sam and **Epstein, Beryl.** Dr. Beaumont and the man with a hole in his stomach. 1978. Coward, McCann, $5.99.

Gr. 4–6. A remarkable story of how the mystery of digestion began to be solved through Dr. Beaumont's observations and experiments with an injured frontiersman.

Fichter, George S. The space shuttle. 1981. Watts, $7.90.

Gr. 6–8. Unlike many earlier titles, this examination of the U.S.' latest news-making space vehicle notes its problems as well as its successes.

Gallant, Roy A. National Geographic picture atlas of our universe. 1980. National Geographic, Dept. 100, 17 & M Sts., NW, Washington, DC 20036, $14.95.

Gr. 7–9. A stunning introduction to the universe; lush photographs and a solid text make this a must in any science collection.

Grillone, Lisa and **Gennaro, Joseph.** Small worlds close up. 1979. Crown, $8.95.

Gr. 2–4. Two cellular biologists offer startling looks at everyday objects. A sure motivator for younger science enthusiasts.

Herbert, Don. Mr. Wizard's supermarket science. 1980. Random, $5.99; paper, $4.95.

Gr. 4–7. A useful, if frenetically illustrated, compilation of more than 100 science activities simple enough for most middle-graders.

popular reading

This selective, retrospective list of science books, by Denise Murcko Wilms, consists mainly of books published after 1977. The emphasis is on titles that have potential for popular appeal as well as for instruction, either because of their subject or because of their handsome design and sound, accessible approach. Ideally, a science book combines the aesthetic with the technical, but that's not always the case; in a few books here, practical, high-demand content won out over format. This list is subjective, but it aims to highlight the best. Subscriber response is welcome.

science all-stars

and beautiful ... to-read chronology of a forest's growth from cleared farmland to maturity.

Kiefer, Irene. Poisoned land: the problem of hazardous waste. 1981. Atheneum, $9.95.

Gr. 7–9. A useful introduction to a topic increasingly in today's news.

Kohl, Judith and **Kohl, Herbert.** The view from the oak. 1977. Sierra Club/Scribner, $12.95; paper, $4.95.

Gr. 7–9. An effective, aesthetic ecology lesson is the result of this careful consideration of how various living creatures relate to space, time, sense, and territory.

Lauber, Patricia. Journey to the planets. 1982. Crown, $11.95.

Gr. 5–7. A lucid, artfully designed tour of the planets reports on what recent space probes have told us about them.

Lauber, Patricia. Seeds: pop, stick, glide. 1981. Crown, $9.95.

Gr. 2–6. The wonder of nature is splendidly exemplified in this handsome book that explores the many byways of the traveling seed.

Lauber, Patricia. What's hatching out of that egg? 1979. Crown, $9.95.

Gr. 3–5. Eggs might look more or less the same, but Lauber's inspection shows some widely diversified contents.

Leen, Nina. Snakes. 1978. Holt, $6.95.

Gr. 4–8. An inviting, sometimes compelling photo essay that examines snakes by function rather than species.

Lerner, Carol. Flowers of a woodland spring. 1979. Morrow, $8.75.

Gr. 3–4. Precise botanical drawings grace this presentation of the flowering plants that can be seen commonly in a woodsy spring setting.

MacClintock, Dorcas. A natural history of raccoons. 1981. Scribner, $10.95.

Gr. 7–9. A sprightly, detailed study of the ...oon, distinguished by delicate, refined ...wings. For the advanced junior high ...ol biologist.

...cClintock, Dorcas. A raccoon's first ... 1982. Scribner, $10.95.

...4–6. For younger readers than the above, ...look at an orphan raccoon is packed with ...rmation useful to both the researcher and ...browser.

...lung, Robert M. Lost wild worlds. ... Morrow, $10.25.

...lung, Robert M. Vanishing wildlife ...tin America. 1981. Morrow, $8.95.

...7–9. Together these titles offer a discern... thoughtful overview of endangered spe... in the Eastern Hemisphere.

...lung, Robert M. Peeper, the first ... of spring. 1977. Morrow, $7.63.

...–4. Exquisite pen drawings and a simple ...tive combine to describe the life cycle of ...g peepers.

...rman, Thomas. How to make your ...ce project really scientific. 1974. ...eum, $9.95; paper, $1.95.

Gr. 6–8. A discerning examination of scientific method that probes the often-unrecognized distinction between observed evidence and fact.

National Geographic book of mammals. 2v. 1981. National Geographic, Dept. 100, 17 & M Sts., NW, Washington, DC 20036, $22.95.

All ages. This comprehensive, well-organized, lavishly illustrated album of mammals of the world is an excellent reference source for both home and library.

Nestor, William P. Into winter. 1982. Houghton, $9.95.

Gr. 4–6. Those who think of winter as a barren time will change their minds after sampling some of the many activities Nestor offers to spark scientific exploration into this season.

Pringle, Laurence. Nuclear power. 1979. Macmillan, $9.95.

Gr. 6–9. A careful look at nuclear power and the controversy that surrounds it.

Pringle, Laurence. Water: the next great resource battle. 1982. Macmillan, $8.95.

Gr. 7–12. A concerned survey of water supplies and management makes clear that this vital resource may no longer be taken for granted.

ALA Booklist

Troll 2-3 Student Book Club News
TROLL BOOK CLUBS Mahwah, New Jersey 07430
September 1983

3. *The Berenstain Bears and the* MESSY ROOM

by Stan and Jan Berenstain
32 pages
What a mess! Mama wants to clean up the little bears' room. But oh, no...She is throwing everything away! Do you think Papa has a better plan? ~~$1.50~~ **$1.25**

Dear Girls and Boys,
Do you like stories? Do you like to laugh? Here are lots of exciting books for you. You'll have lots of reading fun!
Your friends,
the Trolls

FREE FOR YOU!

Barrel of Fun 11" × 17" in full color.
You can have a barrel of fun with these cute puppy pals. This poster is *free* when you order 3 or more items.

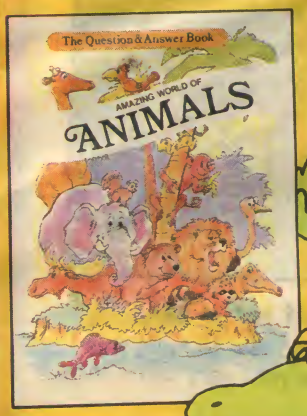
8. Ewoks Join the Fight

by Bonnie Bogart
32 pages

Help! Luke, Han and Leia are in trouble. Now it is up to the furry little Ewoks to save the day. Here is an exciting adventure based on the hit movie, *Return of the Jedi.* ~~$1.95~~ **$1.25**

2. Amazing World of Animals

by Lawrence Jefferies **32 pages**
Do you know what kind of tracks a raccoon makes, or what baby frogs are called? This book gives you all kinds of fun facts about animals. You'll like the color pictures, too.
~~$1.95~~ **95¢**



25. **Snow White (Book Only)**
26. **(Book & Record Read-Along)**
retold by Carol Drexler **24 pages**
Snow White is in danger...can her seven small friends save her? Buy this book or get it with a read-along record.

Book only, **95¢**

Book and record, just **$1.95**

14. **Magic Tricks You Can Do**
by Robyn Supraner
Presto! Start you magic show. This shows you how t lots of great ma tricks. ~~$1.95~~

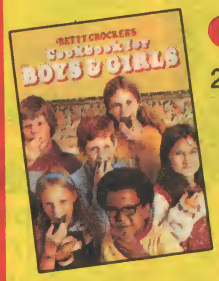
1. **Adventures of Superman**
by Patricia Relf **24 pages**
Oh, no! Some crooks are robbing a bank. This is a job for...Superman! Lots of action and color pictures, too. ~~$1.25~~ **95¢**

Poster

19. **Thunderbolt** **24" × 18"**
Whoa! Wouldn't you like to have this beautiful horse for your very own? In full-color, **only 75¢**

Dear Parents,
Encouraging your child to read is so important. And with the high-quality, low-cost books, records and posters in the Troll Book Club, you're sure to find plenty of wonderful selections to help your child laugh, learn and find out how much fun reading can be!

3 SPECIAL OFFERS



29. **Betty Crocker's Cookbook for Boys & Girls** **128 pages**
No-Crust, Wide-Eyed Pizzas...Cheesy Pretzels...Homemade Crunchy Peanut Butter...and more! You can make lots of yummy foods with this simple, full-color recipe book. It's fun!
A $3.95 value...**only $2.95.**

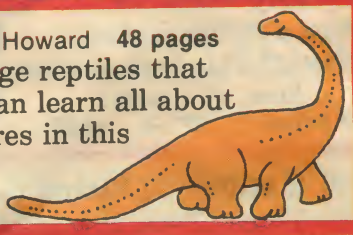
30. **Off to See the Wizard Book Bag** *Part 1* **32 pages**
Join Dorothy and all her friends as they set off in search of the Wizard of Oz. This colorful book comes with a word-for-word read-along cassette, too. **Special club price $3.95.**

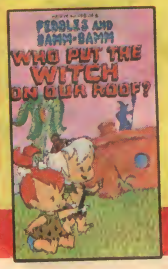
31. **Star Wars Question & Answer Book About Computers**
by Fred D'Ignazio. **64 pages**
Did you know that computers are used in electronic games, calculators ...and even in people? R2D2 and C-3PO of *Star Wars* tell you all about real computers in this full-color book.
~~$4.95~~...**just $3.95.**

24. **Snoopy Strikes Again Maze Book** **64 pages**
Grab your pencil! Here is a book of great Snoopy mazes for you to do. ~~$1.25~~ **95¢**

23. **Scooby-Doo Mad Libs**
It's easy to make up your own silly stories about Scooby-Doo. All you do is fill in the blanks and read back the funny results.
~~$1.75~~ **95¢**

7. **Dinosaurs** by John Howard **48 pages**
Dinosaurs were strange reptiles that lived long ago. You can learn all about these exciting creatures in this easy-to-read book.
~~$1.50~~ **75¢**





28. **Who Put the Witch On Our Roof?** by H.J. Elias **96 pages**
Pebbles and Bamm-Bamm make friends with a good witch who is lost in Bedrock. Can they help her find her way? ~~95¢~~ **75¢**

Earth, sea and sky covere

He predicts robot world

The possibility that robots will be a common part of life in the future will be addressed by computer expert Fred D'Ignazio during the Matrix: Midland Festival '84.

D'Ignazio's family of walking, talking and singing robots and computers will open the festival, with the computer expert scheduled to make three presentations about his mechanical friends.

D'Ignazio, who lives in Roanoke, Va., will share his view of the future at 4 p.m. June 4 when he presents "Robot Friends and Computer Friends," a story hour for children in kindergarten to the sixth grade at the Center for the Arts. At 7:30 p.m. the same day, he will advise adults about using home computers in "How to Get Intimate with Your Computer."

D'Ignazio also will be present during a brown bag lunch at 11:45 a.m.

D'Ignazio, who compares his robots to an electronic circus, has the mechanical members of his family to do back flips and somersaults.

D'Ignazio has conducted an international robotics literacy course in London, England. He was born in Bryn Mawr, Pa. in 1949 and became a fan of movies concerning monsters, robots and computers. As a child he tried to build robots using parts from copying machines and erector sets.

He attended computer science graduate school at the University of North Carolina and has published several books, including "The Creative Kid's Guide to Home Computers," "Electronic Games" and "Chip Mitchell: The Case of the Stolen Computer Brains." He is a member of the advisory board for Terrapin, Inc., a Cambridge, Mass. robotics manufacturer.

Fred D'Ignazio and family

Astronauts discuss missions; oceanographers address climate

Computers, space flights and other wonders of science will highlight Matrix:Midland Festival '84 as a host of scientists explain their work to the public.

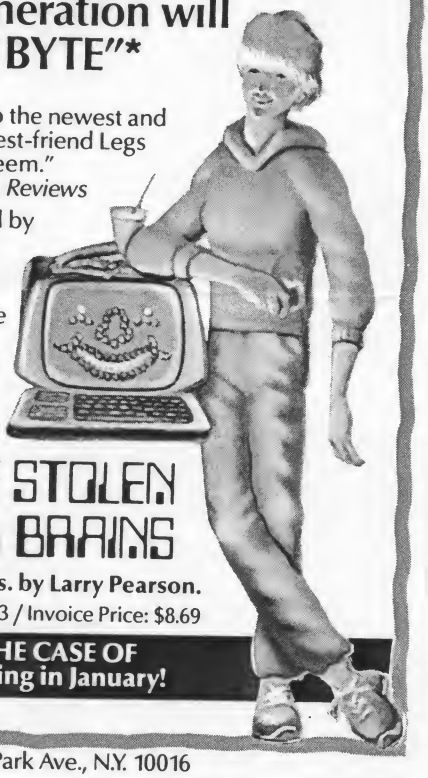
Computer graphics and the role they will play in the 1990s will be dis-

An exciting new series of solve-it-yourself computer mysteries that "the chip-savvy generation will gobble up BYTE by BYTE"*

★ "It's BASIC, my dear Legs. Or so the newest and brightest of the kid sleuths—with best-friend Legs Feinberg as his Watson—makes it seem."
—*Kirkus Reviews

"Computer buffs will be challenged by these 10 mysteries, and others may find the book a useful introduction to the field."
—*Children's Book Review Service*

"An interesting twist on a well-tried genre." —*Booklist*



CHIP MITCHELL: THE CASE OF THE STOLEN COMPUTER BRAINS

By Fred D'Ignazio. Illus. by Larry Pearson.

Ages 10–14 / 0-525-66790-3 / Invoice Price: $8.69

Watch for CHIP MITCHELL: THE CASE OF THE ROBOT WARRIORS—coming in January!

LODESTAR BOOKS
A Division of E. P. Dutton, Inc., 2 Park Ave., N.Y. 10016

THE SCIENCE TEACHER (SEPTEMBER 1983)

Working Robots
by Fred D'Ignazio
149pp. $11.50. Lodestar Books, 1982.

This fascinating, highly readable introduction to robotics, the science of robots, explores the various kinds of working robots and how they are used in industry. D'Ignazio shows how a person with no computer background can easily pick up enough "computerese" to be on speaking terms with a robot.

What sets the book apart is its enthusiasm for the subject—your appetite may be whetted for a minicourse or even a whole curricular package on robotics. Students will see how easy it is to get involved with robots, especially if a microcomputer (with graphics capability) is available.

The well-illustrated book, which includes a glossary, bibliography, and resource list, can serve as a vocational aid for teachers and high school students.

Rebecca Brune

The Science Teacher 9/83

ALA BOOKLIST (11/15/83)

D'IGNAZIO, Fred. *Messner's Introduction to the Computer.* 286p. illus. photogs. glossary. index. CIP. Messner. May 1983. PLB $10.29. ISBN 0-671-42267-7. LC 82-42881.

Gr 6 Up—The author's focus is on the inventors, from Charles Babbage, a 19th-Century British mathematician who designed the first modern computer, to Steve Wozniak and Steve Jobs of Apple—their personalities and just what drove them to create as they did.

Intriguing chapter headings (i.e., "Dinosaurs, Bugs, and Exploding Pickles") and timely examples such as *Tron* and the "Star Wars" series are used effectively to hold readers' attention; then D'Ignazio effortlessly lures readers toward present and future endeavors (i.e., computers and the handicapped, robots, graphics). An enthusiastic and entertaining look at the evolution of the computer with projections as to where the industry is heading.—*Naomi J. Rhodes, Buffalo & Erie County Pub. Lib., Buffalo, N.Y.*

SCHOOL LIBRARY JOURNAL (SLJ)
(OCTOBER 1983)

FAMILY COMPUTING → (OCTOBER 1983)

Katie and the Computer
Fred D'Ignazio.
Creative Computing Press. 1979
38 pp., hardcover, $8.95

Author Fred D'Ignazio, to quote from his biography, "believes that the computer should be introduced to children as a wonderful tool, rather than as a forbidding electronic device." His little book, *Katie and the Computer*, sets out to teach basic computer concepts by letting the young reader follow Katie through a fantasy adventure in Cybernia, a world inside the machine.

Like Lewis Carroll's *Alice in Wonderland*, D'Ignazio's book reveals deep logic through whimsy and wordplay. Normally abstract and difficult ideas—the operating system, binary math, bits and bytes, and programming errors—are transformed into engaging characters and their significance made apparent through exciting and humorous narrative. Young children delight in the story, and Stan Gilliam's profuse and colorful illustrations can help slower readers to follow the plot on their own. The book would be best read by parent and child together, preferably with a home computer at hand. Even the most computer-sophisticated adult will find something to laugh at in *Katie*.

—JOHN B. JAINSCHIGG

WORLD FANTASY CONVENTION 1983

Sixty Years of Weird Tales

POCKET PROGRAM

11:00 am	Book into Film *Robert Bloch, Peter Straub, Whitley Strieber, Douglas Winter (moderator)*
12:00 noon	Getting Away from Tolkien *C.J. Cherryh, Stephen Donaldson, Paul Hazel, Gene Wolfe, David Hartwell (moderator)*
1:00 pm	The Horror Novel *Les Daniels, Robert McCammon, T.M. Wright Marvin Kaye (moderator)*
2:00 pm	The Fantastic Art of Rowena Morrill Slide Show *Rowena Morrill*
3:00 pm	Dark Valley Destiny *L. Sprague de Camp, Catherine Crook de Camp*
4:00 pm	Remembering *Weird Tales* *Fritz Leiber, Manly Wade Wellman, Jack Williamson, Karl Edward Wagner (moderator)*
4:00 pm	Art Show Closes for Auction Preparations
5:00 pm	Art Show Reopens - Meet the Artists Reception in the Art Show Area
6:00 pm	Dealer's Room Closes
7:00 pm	Art Show Closes
7:00 pm	Women in the Fantasy Field *Jill Bauman, Phyllis Eisenstein, Sharon Jarvis, Betsy Wollheim, Julian May (moderator)*
7:00 pm	Rare Books, Manuscript and Rare Art Auction (Suites A, B, C)
8:00 pm	A Writer Talks to Editors and Publishers *Susan Allison, Lou Aronica, Ian Ballantine, Tom Doherty, Charles Grant (moderator)*
9:00 pm	*Harlan Ellison* reads "Send in the Dancing Frogs"
9:00 pm	Art Auction (Suites A, B, C)
11:00 pm	Video — The Best of *Weird Tales* on TV "Pigeons from Hell" by Robert E. Howard "Masquerade" by Henry Kuttner

SUNDAY, OCTOBER 30

9:30 am	Fantasy for Young Adults and Children *Fred D'Ignazio, Patricia McKillip Jane Yolen (moderator)*
10:00 am	Registration Opens
10:00 am	Art Show Opens
10:00 am	Dealer's Room Opens
10:30 am	New Writers in Fantasy *Robin Bailey, Raymond Feist, Patricia Hodgell, Patricia Wrede, Betsy Wollheim (moderator)*
12:00 noon	Art Show Closes
1:30 pm	Ninth World Fantasy Awards Banquet (a luggage storage room will be available - the location will be posted at the Convention)
2:00 pm	Dealer's Room Closes

AUTOGRAPHING

To make sure that everyone has an equal opportunity to get their books autographed, we ask that you limit autographing to three books at one time when there is a line for an author. Obviously, you can get in line again if you want to get three more books signed, and if there is no line, common sense should prevail on giving everyone a chance.

Door's open at 5:00 pm Friday

ROANOKE VALLEY CIVIC CENTER, ROANOKE, VIRGINIA

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PRESENTS

RoVaCon 9

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SHELLY WINTERS
as Lydia

With
Lynn Bancroft
as Mary

Winner of the
"You Ought to Be in Pictures"
Contest at RoVaCon 8

RoVaCon sf

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George Takei
Star Trek's "Mr. Sulu"

Fred D'Ignazio

SCHOLARSHIPS

Money received by RoVaCon S.F., Inc. finances five national scholarships awarded by the RoVaCon Committee to outstanding high school seniors.

The Edmond Hamilton/Leigh Bracket Scholarship
The Elizabeth Taylor Drama Scholarship
The Frank Kelly Freas Art Scholarship
The Rhonda Fleming Social Studies Scholarship
The William Shatner Science Scholarship.

A Non-profit, Educational Organization

GUEST OF HONOR (AUTHOR)

JO CLAYTON

Bait of Dreams
The 9-Volume *Diadem* Series
The *Duel of Sorcery* Trilogy

GUEST OF HONOR (SCIENCE)

FRED D'IGNAZIO

Assistant Editor *Compute!* Publications
Personal Computer Commentator for
"Good Morning America"
Author of *Working Robots,*
The Science of Artificial Intelligence
Computing Together: A Parent and Teacher
Guide to Using Computers with Young Children

ART EXHIBITION

Featuring the work of

SPECIAL GUEST ARTIST

FRANK KELLY FREAS

Ten-time Hugo Award Winner

PHIL HAWKINS
Writer/Illustrator
Creator of "Rova"

CARL LUNDGREN
Illustrator
Lecture/Slide Show:
"One Man's Approach
to Illustration"

BOB SIMPSON
Noted *Star Trek* Artist

BOB EGGLETON
SF/Astronomical Artist
Lecture/Slide Show:
"Astronomical Art"

JOHN LONGENDORFER
Painter/Sculptor
Fantasy & Medieval Art

WENDY PINI
Elfquest Artist

DELL HARRIS
SF/Fantasy Illustrator

And showcasing the work of
local and regional artists.

GUEST AUTHORS

RICHARD PINI
Elfquest

M. A. FOSTER
Gameplayers of Zan, The Morphodite,
The Warriors of Dawn, and Transformer

RALPH ROBERTS
The Berserkers
SF&F Short Story Writer

PAUL DELLINGER
Master of Ceremonies
SF&F Short Story Writer

ALLEN L. WOLD
The Planet Masters & Star God
The Science of Artificial Intelligence

JOHN MADDOX ROBERTS
Cestus Dei, Space Angel,
The Falcon Series (as Mark Ramsay)

EDITORS AND PUBLISHERS

J. R. MCHONE
Editor

DENNIS SMIRL
Editor/Publisher

FRANK S. BROWN
Editor

ORGANIZATIONS

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(Founded by Dr Werner von Braun)

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Display & Films

THE PLANETARY SOCIETY
Display

* Is there appropriate feedback that aids the user in obtaining the right answer without automatically supplying it? Does the program direct the user to the appropriate level of practice?
* Does the software provide or suggest ways to record user performance so that learning can be evaluated?
* Does the program provide enough problems, questions or levels to ensure reusability?

BUYING A COMPUTER

Lou Roberts, director of technical evaluations at the Educational Products Information Exchange Institute, is the hardware evaluator for "Educational Computing Profile."

When shopping for a computer system, don't be seduced by slick features, catchy advertisements or aggressive sales personnel. Do read all you can about hardware and software, compare notes with friends and colleagues and, of course, watch "Educational Computing Profile" every month.

Armed with those caveats, let's go over some points to remember.

1. Define your needs—major, minor and future needs. Then match this list with the capabilities of the computer you are considering. You may find that a less expensive machine can serve you best.
2. Determine your budget. Consider not only the main computer unit, but add-ons, such as printers, monitors and software you'll be using, which can double or triple your costs.
3. Unless you plan to use a computer solely for programming, make a careful check on the availability of software. Read software articles and reviews, such as EPIE Microcomputer PRO/FILES. Ask your vendor to demonstrate software you plan to purchase. Ask colleagues and other professionals to recommend good programs.
4. Decide on the amount of memory you require. If you plan to use prepackaged software, check to see how much memory you will need. If you use the computer to teach programming, the more complex the program, the more memory you require.

There are many uses at home and in school for a microcomputer—in instruction, in management and administration, as a tool for processing, storing and retrieving data and in the areas of research and telecommunications. By carefully considering your needs and resources *first* and by doing some comparative shopping, you will avoid costly mistakes and equipment destined to become dust collectors.

HIGHLIGHTS

The following are descriptions of the first five editions of "Educational Computing Profile." Each program is 30 minutes in length.

Vol. I, No. 1 Ken Komoski hosts "Educational Computing Profile," a monthly series updating parents and educators on the quality of electronic products, services and activities. The September edition features Irwin Landau, editor of *Consumer Reports,* and Rowan Wakefield, editor of "American Family" Newsletter, in a discussion of computer literacy. Lou Roberts, EPIE's technical director, compares three popular computers with similar capabilities, but vastly different prices, and Ellen Bialo, EPIE's courseware evaluator, evaluates two courseware packages designed to develop vocabulary skills. A segment on current trends in electronic learning also is included.

Vol. I, No. 2 The October edition of "Educational Computing Profile" features Dr. Henry Jay Becker, project director at the Center for Social Organization of Schools, Johns Hopkins University; Dr. Inabeth Miller, director of the Gutman Library at the Harvard Graduate School of Education; and Bill Mattingly, regional resource teacher for public schools in Jefferson County, Kentucky, in a discussion of planning for and using microcomputers in the classroom. Lou Roberts of EPIE compares the Apple IIe and Apple II Plus microcomputers, and software evaluator Ellen Bialo looks at several examples of drill and practice courseware. Lydia Copeland reports on new trends in electronic learning.

Vol. I, No. 3 Fred D'Ignazio, associate editor of *Compute!* magazine, contributing editor to *Enter!* magazine and TV commentator ("Good Morning America"), joins host Ken Komoski for the November edition of "Educational Computing Profile." D'Ignazio talks with parents about home computer activities they can share with their children; Lou Roberts looks at printers and Ellen Bialo explains what features to look for in logic and problem-solving courseware. Lydia Copeland reports on new trends in electronic learning.

Vol. I, No. 4 In the December edition of "Educational Computing Profile" Lou Roberts profiles two computers under $200, the Commodore 64 and VIC-20, and Ellen Bialo discusses word processing software. Ken Komoski talks with Robert L. Eicholz of Houston Independent School District's "Computers Can" project and Assistant Superintendent Thomas Fowler-Finn of the Forest Hills, Ohio, school district. Lydia Copeland reports on trends in electronic learning.

Vol. I, No. 5 Regulars respond to viewer mail in the January edition of "Educational Computing Profile." Ellen Bialo discusses the process EPIE uses for software evaluations. Lou Roberts explains criteria for hardware evaluations. Guest Robert Haven, director of the EPIE Data Base on educational software, joins host Ken Komoski, Ellen and Lou for an overview of the software market. Lydia Copeland reports the trends and news.

JULY 22, 1983/(ISSN 0000-0019) VOL. 224 NO. 4

$2.00

Publishers Weekly

The Journal of the Book Industry

CHILDREN'S BOOKS FOR FALL

INDEX TO FORECASTS

Contents, Page 57

ing, a persistent ex-boyfriend, an unsympathetic best friend and even her dog. A Lippincott Page-Turner. (12-up)

LITTLE, BROWN

Santa and Alex by Delia Ephron, pictures by Elise Primavera ($12.95, paper $4.95). The adventures of Alex and his stuffed bear, who wait up to get a peek at Santa one Christmas Eve. (All ages)

From the Hills of Georgia: An Autobiography in Paintings by Mattie Lou O'Kelley, with her paintings ($13.95). Folk artist O'Kelley depicts the story of her growing up on a farm in Maysville, Ga., during the early 1900s. An Atlantic Monthly Press book. (All ages)

The Steadfast Tin Soldier by Hans Christian Andersen, paintings by Alain Vaës ($13.95). A newly illustrated version of the love affair beween the one-legged soldier and his paper ballerina. (All ages)

Perfect Pigs, written and illustrated by Marc Brown and Stephen Krensky ($10.95, paper $5.95) contains tips on how and how not to behave in various situations. An Atlantic Monthly Press book. (3-8)

Inspector Smart Gets the Message! by Richard Fowler, with his drawings ($7.95). Inspector Smart follows a trail of clues hidden within pictures, as he goes on the hunt for his birthday present. (6-8)

No More Secrets for Me by Oralee Wachter, illustrations by Jane Aaron ($10.95). Four stories about children subjected to different kinds of sexual abuse. (6-10)

Terrible Tales of the Happy Days School by Lois Duncan, pictures by Friso Henstra ($9.50). A collection of 12 cautionary verses that describe the behavior of some nasty students. (8-12)

Dirt Bike Runaway by Matt Christopher ($9.95). Peter, a shy runaway from a foster home, enters a dirt bike race, but knows that winning is only half the battle. (9-11)

Should You Shut Your Eyes When You Kiss? Or, How to Survive "The Best Years of Your Life" by Carol McD. Wallace, pictures by Martha Weston ($12.95, paper $5.95). A survival manual for adolescents, by the co-author of *The Official Preppy Handbook.* (12-up)

Paperbacks

Our Teddies, Ourselves: A Guide to the Well Bear by Margaret and Douglas Palau, illustrated by Dianne Cassidy ($3.95). A home companion of teddy bear care, with instructions on dealing with a range of teddy emergencies. (All ages)

LODESTAR
(Dutton)

The Animal Shelter by Patricia Curtis, photos by David Cupp ($11.95) goes inside an SPCA shelter and discusses the problems that can arise in caring for sick or unwanted animals. (10-14)

Chip Mitchell: The Case of the Robot Warriors by Fred D'Ignazio, illustrated by Larry Pearson ($9.95). Computer brain sleuth Chip Mitchell returns with eight solve-it-yourself mysteries involving computers. (10-14)

Mysteries of the Universe by Franklyn M. Branley, diagrams by Sally Bensusen ($10.95) poses questions about the universe, discusses theories of its origin and explores its mysteries. (10-14)

Water World by Mary Lee Settle ($10.95). A discussion of the plants, animals, legends and lessons of life undersea. (10-14)

Skinny Malinky Leads the War for Kidness by Stanley Kiesel ($11.95). Aided by a friend and his computer, Skinny Malinky tries to elude the powerful Mr. Foreclosure and put the kidness back into kids turned into perfect children by a machine. (12-up)

Razor Eyes by Richard Hough ($10.95). A novel charting a young man's growth from a boy to a courageous fighter pilot during World War II. (12-up)

LOTHROP, LEE & SHEPARD

Secrets of a Wildlife Watcher, text and pictures by Jim Arnosky ($9.50). A guide to seeing animals in the wild, with over 125 drawings. *A Junior Literary Guild selection.* (All ages)

The Illustrated Dinosaur Dictionary by Helen Roney Sattler, illustrated by Pamela Carroll, color insert by Anthony Rao and Christopher Santoro ($17). A listing of more than 300 dinosaurs that have been discovered and named to date, plus entries on dinosaur-related terminology. (All ages)

It Hardly Seems Like Halloween, story and drawings by David S. Rose ($9.50). A young boy and his dog venture out on Halloween, full of eerie expectations. *A Junior Literary Guild selection.* (3-6)

The Kettleship Pirates by Rodney Peppé, with his pictures ($9). A crew of mice set sail on a kettleship in search of buried treasure. (3-6)

Mary Anne by Mary Mapes Dodge, illustrations by June Amos Grammer ($9.50). First published in *St. Nicholas* magazine, this poem tells how a young girl dresses her

Leonard Kessler's drawing from Old Turtle's Winter Games *(Greenwillow)*

The Ten-Alarm Camp-Out by Cathy Warren, illustrated by Steven Kellogg ($9.50). Mama Armadillo and her nine babies cause havoc in Puddle Park. *A Junior Literary Guild selection.* (3-6)

When I Grow Up and You Grow Down, text and pictures by Kathe Tanous Levenson ($9). An imaginative little girl tells her mother how things will be, someday. (3-6)

I Met a Polar Bear by Selma and Pauline Boyd, illustrations by Patience Brewster ($9.50). A child describes the creatures (a lost polar bear, a sassy earthworm, a burdened ant) that have made him late for school—again. (4-8)

The Midnight Castle by Consuelo Joerns, with her drawings ($9.50). A family of mice makes itself at home in a toy castle, only to discover that the castle and its medieval inhabitants become real at the stroke of midnight. (4-8)

Sam Johnson and the Blue Ribbon Quilt, written and illustrated by Lisa Campbell Ernst ($9.50). Sam Johnson and his fellow farmers challenge the talents of the women's quilting club at a turn-of-the-century county fair. *A Junior Literary Guild selection.* (4-8)

The Shoemaker and the Elves, retold and illustrated by Cynthia and William Birrer ($9.50). The favorite tale of a poor cobbler and his tiny helpers, with fabric and stitchery pictures. (4-8)

Why Won't Winter Go? by Lissa McLaughlin, with her drawings ($9.50). Andy and his sister Meg find proof that spring is coming in this story of sibling friendship. (4-8)

St. Francis of Assisi, retold by Nina Bawden, illustrations by Pascale Allamand ($9.50), describes events in the life of one of the most beloved Christian saints. (5-8)

general background

Ardley, Neil. Computers. 1983. Watts, $9.90.

Gr. 4–8. Full-color illustrations and photographs distinguish an extended, comprehensive discussion of the components and capabilities of computer systems.

Berger, Melvin. Data processing. 1983. Watts, $8.90.

Gr. 5–8. A thorough introduction contains chapters that focus on types of computer input, processing, storage, output, and programming.

Bitter, Gary G. Exploring with computers. Rev. ed. 1983. Messner, $9.29.

Gr. 3–6. A section of computer-related activities designed to test readers' comprehension wraps up this proficient survey of types and uses of computers.

Cohen, Daniel and **Cohen, Susan.** The kid's guide to home computers. 1983. Pocket/Archway, paper, $1.95.

Gr. 5–8. An illustrated guidebook to brand-name hardware and software offers useful advice on selecting a personal computer.

D'Ignazio, Fred. Messner's introduction to the computer. 1983. Messner, $10.29.

Gr. 6–10. A wealth of historical background will put the "information revolution" in perspective for older readers.

Graham, Ian. Computer. 1983. Watts, $9.90.

Gr. 4–6. An oversize volume loaded with colorful illustrations defines basic terms and pictures a few common computer applications.

Greene, Laura. Careers in the computer industry. 1983. Watts, $8.90.

Gr. 4–8. Various kinds of computer-related careers are discussed in a text that offers practical information on education requirements, training, and job responsibilities.

Hawkes, Nigel. Computers: how they work. 1983. Watts, $9.40.

Gr. 3–5. Full-color photographs and diagrams help explain the electronic circuitry and logic functions that enable a computer to compute.

Hellman, Hal. Computer basics. 1983. Prentice-Hall, $8.95.

Gr. 4–6. Computer history, logic, and functions are covered in a methodical survey that includes diagrams and a few BASIC programs.

Hintz, Sandy and **Hintz, Martin.** Computers in our world, today and tomorrow. 1983. Watts, $8.90.

Gr. 4–8. A well-researched and readable analysis of the impact of computers on our daily lives in fields such as medicine, law enforcement, and government.

Richard, Ian. Computers. 1983. Watts, $8.90.

Gr. 1–3. Straightforward language makes this simple text on computers and what they do accessible to a primary-grade audience.

D'Ignazio, Fred. Chip Mitchell: the case of the robot warriors. Illus. by Larry Pearson. 1984. [105p.] Dutton/Lodestar, $9.66 (0-525-67140-4). Galley.

Gr. 5–8. In this sequel to *Chip Mitchell: the Case of the Stolen Computer Brains* (*Booklist* 79:776 F 15 83), the 13-year-old computer ace solves eight mysteries; the answers appear at the back of the book, so readers can figure them out too. Aided by his friend Leggs, his robot Sherwin, and his computer Hermes, Chip is barely baffled by such puzzles as "The Case of the Zapped Outer-Space Game," in which a young paraplegic helps foil an electronic bank robbery. Although all the cases have to do with computers and robots (and in some, the information is quite complex), one does not necessarily have to be a "hacker" to figure them out. Most of the solutions are based more on common sense than on computer lore. For those not in the know about technical terms (like *hacker*) a helpful glossary is appended. Chip Mitchell takes Encyclopedia Brown into the twenty-first century. IC.

Computers—Fiction | Mystery and detective stories | Literary recreations [CIP] 83-13529

Booklist 3/84

games and graphics

Bolognese, Don and **Thornton, Robert.** Drawing and painting with the computer. 1983. Watts, $8.90; paper, $4.95.

Gr. 3–6. Students with access to computerized "paint machines" can learn basic drawing and design techniques from this well-illustrated handbook.

D'Ignazio, Fred. Electronic games. 1982. Watts, $7.90.

Gr. 6–10. This two-year-old buying guide is still a useful source for specific comparisons of popular computer games.

D'Ignazio, Fred. Invent your own computer games. 1983. Watts, $8.90.

Gr. 5–7. BASIC programs for nine generic types of computer games are provided in a treatment designed to encourage independent, creative game design.

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SIDE

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Shamir was sworn in cceed Menachem Be- prime minister and a r his new government Israeli shekel by 23 ordered other tough will sharply boost the foods. Page A-4.

Staff photo by WAYNE DEEL

TOPO the robot flanked by D'Ignazio family (from left): Catie, Fred, Janet, Eric

Life with a machine: Robot worthless as servant, great as 'pet, friend, educator'

By STEVE COOPER
Staff writer

It won't mow the grass. It won't mop the floors. It won't even fetch the newspaper.

It's TOPO the robot, the latest addition to the robot craze sweeping the country.

For the past week, TOPO, a 3-foot-tall robot that looks like a cross between R2D2 and Frosty the Snowman, has been living with the D'Ignazio family in Southwest Roanoke.

Fred D'Ignazio, computer expert and author of

"I want to find out if robots can become part of a family or if they should be left in the closet," D'Ignazio said.

So far, TOPO has been able to disprove two of the more common ideas about robots: that they will make life easier by doing housework, and that they will make life difficult by replacing people at work.

TOPO hasn't done one household chore for the D'Ignazios and probably won't for the remainder of his stay. What TOPO has done is run into walls, get smacked on the head when it gets in the way and pro-

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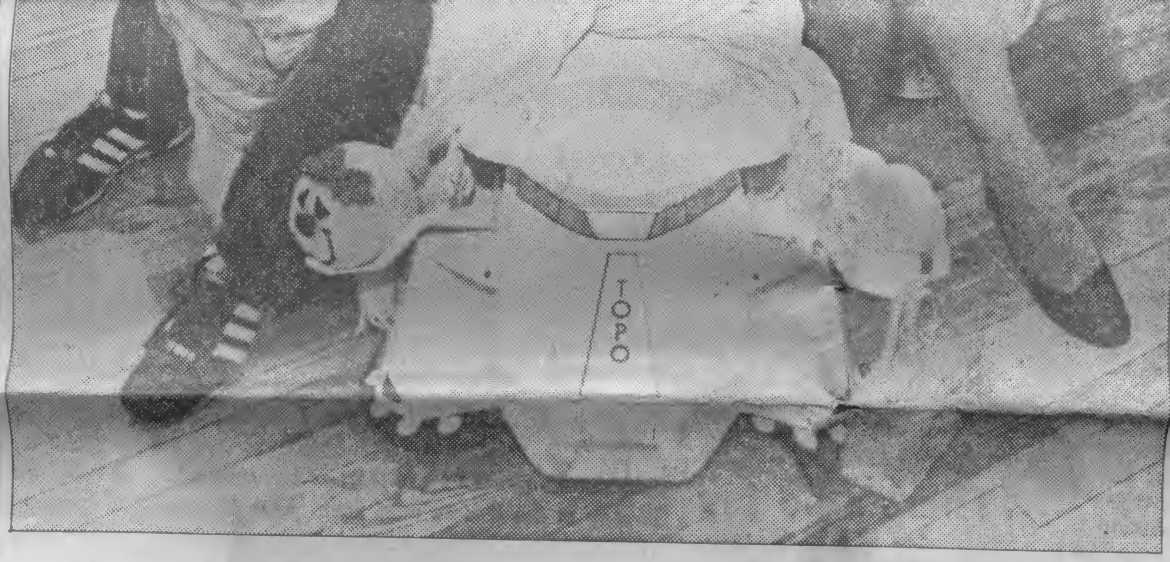

Staff photo by WAYNE DEEL

TOPO the robot flanked by D'Ignazio family (from left): Catie, Fred, Janet, Eric

Life with a machine: Robot worthless as servant, great as 'pet, friend, educator'

By STEVE COOPER
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Fred D'Ignazio, computer expert and author of several children's books on computers, invited TOPO to live with his family so he could write about his children's reaction to the robot. The robot is on loan for several months from Data Base, a computer company.

"I want to find out if robots can become part of a family or if they should be left in the closet," D'Ignazio said.

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Please see **Robot**, Page **A-8**

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Bette Davis recuperating after stroke, mastectomy

BEVERLY HILLS, Calif. (AP) — Award-winning veteran actress Bette Davis suffered a mastectomy and a stroke in June but is recovering, despite doctors' early fears that she would never recuperate, producer Aaron Spelling said Monday.

Miss Davis, 75, has been in New York since the surgery was performed there, her spokeswoman, Nancy Seltzer, said in a telephone interview from New York.

Miss Davis' illness had been kept a secret from the public, but Monday's statement was issued by Spelling through the Rogers & Cowan public relations agency "to put the record straight," said agency account executive Sally Van Slyke. "There were so many rumors floating around."

When asked if Miss Davis had suffered any paralysis from the stroke, Ms. Seltzer said only, "She's fought a very, very strong fight and she's come out on top. She's not prepared at the moment to go into detail about her illness.

"When she returns to Los Angeles, she'll show herself," Ms. Seltzer said. "She wants to do it in a real Bette Davis way."

Spelling's statement said, "In June, she had a mastectomy and nine days later, a stroke. For a time, her doctors held little hope that she could recover ever. She calls her recovery a miracle as do her doctors."

Aaron Spelling Productions Inc. is co-producing the new television show, "Hotel," in which Miss Davis was signed to be a recurring character.

Although Miss Davis appeared in the two-hour premiere of the show, which was broadcast on ABC on Sept. 21, she was not able to appear in

Please see **Davis**, Page **A-8**

Bette Davis
Illness kept secret

From Page A-1

Rejected, by a 5-4 vote, a plea on behalf of 30,000 disabled Americans who are seeking an estimated $19.5 million a month in additional Social Security benefits.

● Refused to reinstate a $1.8 billion judgment against AT&T, the largest antitrust award in American history, for allegedly trying to monopolize the long-distance telephone market.

Kelly has yet to be sentenced because his conviction was thrown out last year by Federal Judge William B. Bryant in Washington. Bryant said the FBI had created the crime and had violated the former congressman's rights.

The conviction was reinstated last May by the U.S. Circuit Court of Appeals here. The appeals court said Abscam was "indeed an elaborate hoax" but one that legitimately ferreted out corrupt public officials.

In asking the Supreme Court to review the case, Kelly's lawyers said the appeals court had sanctioned "the manufacture of crime" by law enforcement agencies.

The justices, acting without comment, last May rejected appeals by four other former congressmen convicted on Abscam charges.

Appeals by two other former congressmen, John Jenrette, a Democratic representative from South Carolina, and Harrison Williams, a former Democratic senator from New Jersey, are still in the courts.

Robot

From Page A-1

"We don't think of robots as servants. . . . Sometimes we have TOPO carrying things around just for show," D'Ignazio said. "We look at robots as pets, friends and educators."

Seeing all the computerized toys that Eric and Catie own, it's easy to get the feeling that robots and computers are already a part of the D'Ignazio family.

They definitely are part of the other worlds D'Ignazio often writes about in his books and articles. One of his books, "Katie and the Computer" is modeled after "Alice in Wonderland."

D'Ignazio said he and his children like to watch "Whiz Kids," a new TV show about a group of youngsters who solve crimes with their computer and the help of a local newspaper reporter. He said the show was more realistic than movies like "War Games" or "Superman III."

D'Ignazio's model of TOPO costs $500, but a more updated version with eye sensors and a computer brain costs $3,000.

Moving TOPO around takes practice. A joystick, attached to a personal computer that is itself attached to a radio receiver, sends direction messages to the robot. TOPO is powered by a 9-volt battery.

TOPO's controller must stay next to the computer to move the robot because the wire connecting the joystick is only about 3 feet long. It is possible to write a computer program to control TOPO.

When the robot gets out of the controller's sight, it bumps into everything unless someone else calls out directions.

D'Ignazio has found a few uses for TOPO.

In the morning, D'Ignazio marches TOPO around Eric and Catie's bedrooms to wake them up for school. At night, TOPO watches over Eric while he sleeps.

Merit

From Page A-1

each congressional district — to the top 5 percent of a high school graduating class, the cost would be $50 million per year at the most, a modest investment which would pay off many times over," the report said.

The task force, described as a "bipartisan group of educators, school administrators, parents and lawmakers," heard testimony from three major commissions on education that recently issued reports, in addition to governors, state legislators, deans of schools of education, students, teachers and school administrators.

Members of the 21-member task force included Rep. William F. Goodling, R-Pa., who served as vice chairman; Rep. E. Thomas Coleman, R-Mo.; Rep. Ron Wyden, D-Ore.; Albert Shanker, American Federation of Teachers president; Mary Hatwood Futrell, National Education Association president; Elaine Stienkemeyer, National PTA president; Wilson Riles, former superintendent of public instruction for California; Ernest Boyer, president of the Carnegie Foundation for the Advancement of Teaching; and James Sanders, president of the Illinois School Boards Association.

Davis

From Page A-1

through June," Ms. Seltzer said. "We

The film was supposed to "speak for the children," said the show's producer, Linda Otto. Ms. Otto and Executive Producer Joan Barnett, were at Child Find's office here to assist the 30 or so volunteers who answered phones and coordinated information that poured in after the film.

Since its founding in 1981, Child Find has located 595 missing children. Nationwide, about 150,000 children are reported missing annually. Roughly 50,000 of those cases are never solved, estimates Child Find.

Ms. Otto has done other work to help find missing children, including producing a segment for the ABC-TV news magazine "20-20."

The movie dramatized the lives of John and Reve Walsh, whose attempts to find their son led them to persuade Congress to change laws to ease the search for other parents of missing children.

At the end of the two-hour film, photos of 55 missing children were shown as Walsh read the children's names. At the end of that two-minute segment, Child Find's toll-free number was flashed on the screen.

Less than a minute later, callers who thought they recognized faces on the screen lit up all 10 of Child Find's incoming telephone lines. It wasn't immediately clear if the calls would provide information that would lead to recovery of a missing child.

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parental abduction

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"lack the skills needed to grow in business. The process of scheduling, loading the pipeline, shipping and pulling the product through the marketplace with promotion and publicity are skills that are well developed in the publishing business and scarcer in software publishing."

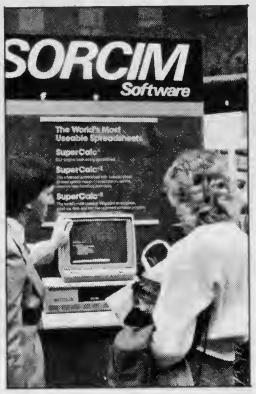
Parallels between acquisition of software and books were offered by Roger Buoy of SFN Electronic Publications, a newly formed software division of Scott Foresman. His comparisons between the two product lines were based on educational and entertainment software normally retailing for $30 to $50. He noted that royalties were greater for software ("more development time needed" was a reason) and that at SFN the royalty was 10% to 20% of net receipts, with incremental increases of 2% for every 20,000 sold. Also, software authors don't want royalties twice a year—not unusual for books—but want "a monthly royalty report accompanied by a check." Another higher figure in the software industry is advances—"they tend to be over $50,000."

Ernie Hursh of Prentice-Hall predicted that the bookstore industry will become "a prime channel for software under $100." This ties in with the niche already carved out with computer books, he pointed out. Hursh quoted from industry figures to estimate that about 10 to 12 books are sold for every machine out in the market—"50% of the sales before the computer is purchased and 50% after." Also, because of their understanding of the book market, Hursh sees publishers as becoming the prime players in the under-$100 software market.

■ Mass Merchandising Opportunities

At "Trends in Mass Merchandising," moderator Aaron Golberg, research manager for information systems at International Data Corporation, noted the increasing importance of marketing expertise in software publishing, especially when a vendor is seeking to reach a mass market audience. It is important to differentiate a product from other similar ones in the consumer's eyes, he said, and packaging, advertising, promotion and support are the keys to differentiation.

Chris Yolanis, director of consulting at Creative Strategies International and director of special services for the Microcomputer Industry Group, discussed how mass merchandisers fit into the overall software market. He estimated that 40% of retail software for the home moved through mass marketers in 1983, and predicted an increase to 50% or 55% by 1987. Mass merchandise outlets accounted for less than 10% of the business software market in '83, he said, and that will decrease to the 5% to 7% range in the next few years. In the school market, he estimated 30% to 35% was sold through mass merchandisers in '83 and predicted an increase in that share to 40% or 45% by '87.



Great Plains of North Fargo, N.D., opted for covered wagon to show off its HARDISK Accounting Series; a more typical booth look was Sorcim's

William Bowman, chairman of Spinnaker Software, spoke on how to get software to home users of PCs through mass merchandisers, beginning with a necessarily brief history of the subject. Mass marketers weren't selling software at all in 1982 (aside from games), and they started cautiously in 1983 with test projects in K Mart, Sears and Target, some of which were expanded when they proved successful. Bowman believes that '84 will be "the year of the mass merchant in software retailing." He offered a four-point "formula for success" for the mass merchandiser of educational software: purchase software appropriate for the store's customer base, e.g., cartridges rather than disks; separate educational software from games; provide prominent display; and use good, local advertising.

Fred D'Ignazio, associate editor at Computer Publications, Inc. (*Compute!*), addressed the psychology of the mass market customer and the present problem with the computer/software industry's image and atmosphere. He said the average mass market consumer is "awed and bewildered" by the technical image conveyed by software and its marketers. There is a need to replace current display arrangements, which look like "junkyards," with displays that project a clean, comfortable image, much like those used for records, fast food and appliances.

Phil Missimore, v-p and executive editor of *Computer Merchandising* and *Software Merchandising* magazines, offered several suggestions to publishers on how to sell software to mass merchandisers. The key characteristics of mass merchandisers, he said, are that the market is self-service, hence packaging must be informative; mass merchandisers will pick bestsellers—they won't buy a whole line; they tend to buy from distributors, so get to those distributors; they expect suppliers to do most of the advertising, as well as providing discounts, sales incentives, co-op, etc.

B. Dalton Bookseller's v-p of software marketing Robert Ponzetti offered a bookseller's perspective on mass market software sales. He gave two primary reasons why Dalton and other booksellers are entering the market. First, they already have a customer base of computer book buyers, and second, their main suppliers—book publishers—are getting into software publishing, and the relationships and selling terms are already in place. He also noted that bookstore buyers like to browse, so packaging for bookstores should facilitate that.

■ The Bookstore as a Software Outlet

Richard Loftin, president of Software Research Company, moderated a panel called "The Bookstore as Software Outlet" on Wednesday afternoon.

Loftin cited a number of issues of importance to booksellers thinking of selling software. The primary one, which is linked to the bookstores' dependence on the use of computers in the home, is whether there will be a significant home market (panel members believed that there will be). Other important issues are whether software publishers will offer products and terms appropriate for bookstores, whether booksellers are willing to organize and make the public aware of the bookstore as a software outlet and whether bookstores can compete with discounters and mass

Publishers Weekly 3/23/84
"Softcon 1984" (Coverage of Softcon Conference)

for community in the present and the future, for culture which values community and primary relations. Give your attention to the ideas and problems raised in these pages and then take the time to work out your own thoughts and criticisms. Please let us know and let us publish the results.

*****

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Neither this editorial nor this newsletter/journal is intended to fully explain all the facets of The Institute. There is much material in print which performs that service and much more in the form of Institute publications. We are presently moving from a format of individual articles to one of three or four collections of papers, in order to make their publication economically feasible and in order to provide a body of unifying and contextual material to tie the individual pieces together.

The actual editing and printing is scheduled to be done over the next four months. You can influence the order and form of these productions by sending back the feedback questionnaire at the back of this issue, which includes questions about this topic.

Presently, four volumes of 50-100 pages each are envisioned. Each volume will center on a single topic:

The Institute Process will include papers outlining the general form and techniques of The Institute's "Future Options Project" and its larger "Century Three Program."

The Preliminary Report to the Media Borough Planning Commission is the first actual Future Options Project proposal, submitted in March 1973. Included are several informal, general descriptions of the F.O.P. concept, as well as a detailed blueprint of the early stages of the Media Project.

The Institute Idea will contain Institute papers treating the intellectual framework of the group. The topics covered include both the basic aims of The Institute and more general ideas, such as the concept of the future or the phenomenon called Haight Ashbury.

The Early Institute will contain the papers produced by The Institute during its first year. They all concern The Institute, its aims, and its future forms.

APPLIED FUTURISM:

INFORMATION TECHNOLOGY

S. Frederick D'Ignazio

Introduction

The primary goal of The Institute is to help people better shape and control their future. The primary means to this goal is through the successful management of change and complexity in everyday life. The chief tool to implement the means is information technology. For the technology to be utilized, The Institute must educate and train people and communities to recognize the *feasibility* of the goal, the *importance* of the means and the *usefulness* of the tool.

The Goal

In recent years a combined area of study and perspective called futurism has appeared on the world scene. This intellectual movement was spawned by the successful application of World War II tools such as the computer, and techniques

such as systems design, to the solution of complex problems and situations. With new methods and equipment mammoth military operations were carried out with unprecedented efficiency. As a result, many people inside and outside government became convinced that through the same means many of the complicated peacetime functions of society like traffic control, economic development, and social welfare could be managed more efficiently. These people, largely policy makers, engineers, and scientists, felt that the sophisticated methods and equipment would allow policy makers more control of larger segments of society's activities.

With the prospect and often the reality of greater control has come the assumption of greater predictability. It is a relatively short leap to futures research and the discipline of futurism in general. In fact, many renowned futurists including R. Buckminster Fuller, John McHale and Dennis Gabor feel that our control of society has now reached a point where we can realistically speak of "inventing" the future. They argue that with the enormous technological resources now at our disposal, futures can be designed and implemented according to our desire, that a wealth of alternative futures lies ahead, and that we are responsible for the future that is actualized.

This rationale falls into the mainstream of U.S. culture, particularly the Protestant work ethic, scientific progressivism, and technological optimism. It assumes free will and laissez faire, values individual freedom, egalitarianism and secular materialism.

The Means

The influence of futurism and its related disciplines has grown considerably over the last 30 years. Its products, in the form of many social and physical technologies, are in widespread use. Lasers, Skylab, computerized traffic control, and some of today's cybernetic corporations are in part a result of the systematic application of futurism's related methods. On the other hand, while the influence of futurism and futurists has never been greater, the spread of their skills and attitude has been minimal. In spite of its growth and its shared dominant values, futurism has done little to counteract the wave of despair, alienation, cynicism, and disillusionment that has been building up in this country over the last quarter century. The causes are many-faceted, but at heart are two key ingredients: the speed of change and the spiralling complexity of everyday living. While it is true that futurism has dealt with these forces at one level - the level of large corporations, universities, and federal agencies - until now it has not penetrated to the level of neighborhood, community, and the average person. As a result, most people benefiting from the high-level products of futurism still have little mastery over the future of their own everyday lives.

Individuals, small organizations, and communities increasingly suffer from future shock, that shattering experience Toffler speaks of occuring when too much change happens too quickly. It is becoming more and more difficult for the average citizen to take into account all the important factors in making decisions crucial to his/her future. As a result we are often less able to accurately predict the outcome of our decisions and are less in command of our futures. After we have found that the future is harder to control, we become more cynical about it and more inclined to believe it is not within our power to have much influence over the future. This attitude gives way to feelings of helplessness and resignation - to well publicized apathy and passivity that characterize our age. Such attitudes need not prevail. Many of the tools that futurists employ can be translated, modified, or rebuilt to increase their usefulness and accessability to the general public. These include such powerful entities as the scientific method, computers, and systems analysis. In order to increase their appeal and intelligibility they must be offered as part of an educational package that will illuminate the benefits and limitations of the futurist approach while tailoring it to the user's needs on a case-by-case basis. The educational package will be designed to help the consumer make use of relevent knowledge to reach a decision reagarding a particular method or piece of hardware.

The Tool

Information technology is the chief tool of The Institute in its efforts to train people to better manage complexity and change. Until the present, this technology has been the explicit domain of computer scientists, engineers, and librarians. However, astute information managers are found in all areas of society, including politics, real estate,

igh finance, and publishing. Up to now, dvanced automated data processing technologies were available only to an elite few because of their high cost and technical nature. Individuals are just now entering an era where they can link up with a third or fourth generation computer by leasing or buying a computer terminal and then purchasing computer time through one of many computer service bureaus around the U.S. on a time-sharing basis. There are new minicomputers from $5000 to $40,000 which can be purchased outright. Along with the many many canned programs available, businesses and institutions can automate their inventory, payroll, and sales records, and can perform complex cash and market forecasts. With the same equipment, communities can take advantage of planning and budgetary control techniques developed by the federal government and large corporations. Some examples are PERT (Program Evaluation and Review Technique), PPBS (Program Planning and Budgeting System), linear programming, cost-benefit analysis, and computer simulation in order to scrutinize contractor's proposals, zoning and ordinance changes, and social and physical services such as health, water, and education.

This fall the MITRE Corporation of McClean, Virginia, will link 3500 cable-TV serviced homes in Reston, Virginia, with a NOVA computer. Programs will be available for home education, doctor's appointments, a community bulletin board, want ads, job listings, general business purposes, auctions, income tax advice, and so on. Computer time will cost only a penny a minute - 60¢ an hour! In one to five years computer-linked cable TV will be able to provide services such as instant referendums, electronic town meetings, town-wide conferences and planning sessions, up-to-date service and product directories with a detailed list of prices and foods at local restautants, clothes in stock at local men's stores, school menus, bus schedules, and many others, almost instantaneously and at an attractively low cost.

Education to Start the Ball Rolling

In Media, Pennsylvania, the site of The Institute's pilot Future Options Project, we have been hard at work trying to convince local townspeople that it is feasible for them to shape and control their future, that to do this, it is important to learn to manage change and omplexity, and that their most useful ool towards these ends is information technology.

(to page 6)

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Educational Techniques used by The Institute in Media, Pa.

Videotape recording was used on two occasions. It was used successfully at a town meeting called by The Institute on the theme "Is there a Christmas in Media's Future?" The meeting was held on Dec. 26, 1972, and attracted many Media residents, town officials and business people. Discussion began with a statement prepared by a local businesswoman and ranged over Media's current problems, its qualities, and its future alternatives. The entire 2-hour meeting was taped and played on twin Sony TV sets at the annual meeting of the American Association for the Advancement of Science in Washington, D.C. in late December.

Mini-Referendums were used on two occasions. In all, 52 local residents - mostly business and proffessional people - took part in The Institute's six-page mini-referendums. Townspeople gave their views on various depicted futures including Media degenerating into a ghetto, a future in which Media was demolished and a totally new, planned community built in its place. Townspeople were encouraged to specualte on the "greatest threat to Media over the next 50 years," and on the way they would like Media to look some 50 years from now. Three quarters of the participants thought that Media's citizens have no commonly agreed-upon goals, while over 90% felt a goal-setting "future options" project would be valuable for Media.

Teaching was begun in early June at the Media-Rose Tree Elementary School with the aid and support of the school's art teacher Dorothy Williams. Arthur Gingrande, Coordinator of The Institute's Century 3 Program and a former school teacher, taught two sixth grade art classes, and was able to get 40 students to draw pictures of the way they thought Media would look over the next half century; these include "Media in 1990," a pollution scenario of Media in the year 2000, and futuristic homes and transportation systems. The Institute is awarding a "Century 3 Future Citizen" certificate to each child who finished a drawing. The finished drawings were displayed at the Media library and at a sidewalk art exhibit, a project to raise money for the Media Future Options Project and to familiarize local citizens with The Institute's work in Media.

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(from page 5)

The key word in our efforts to convince Media's citizens of the merit of our approach is education. We have found that only through education will we be able to introduce The Institute's futuristic methods and equipment in a manner which will appear at once relevent and non-threatening. In its work in Media The Institute has used three educational techniques: videotape recording, a Delphi-like "Mini-Referendum," and teaching - in an elementary school. A summary of these techniques can be seen on page 5.

Conclusion

The skills and attitudes associated with futurism can be used by individuals, small organizations and communities to gain control over their futures. However, up until this point futurism itself has not penetrated to these levels of society. Through its programs The Institute will work to increase this penetration, primarily by demonstrating the practical utility of the futurist approach in answering people's everyday needs, and by enabling people to build themselves a tomorrow which far outshines today.

THE INSTITUTE

The Institute was founded in August 1971. It is a non-profit educational, scientific, and literary organization which is presently taking steps to incorporate and to get non-profit tax status. The Institute has thirty dues-paying members and over forty "volunteer consultants" in a variety of disciplines.

The goal of The Institute is to help individuals, groups, and societies cope with change, so that they can direct their growth into "better" futures, as they may define them. It hopes to do this by creating in the minds of these groups and individuals an awareness and knowledge of change and its effects on them; by actively examining moral beliefs, social mores, and intellectual structures in terms of change, stability, and the quality of human life; and by developing practical techniques for bettering that quality through or in spite of change by selectively drawing from and synthesizing parts of all disciplines, eras, and cultures of humankind.

Community, Freedom, and the Future Options Project

by Clark H. Wilson

Deep in a coma,a human being in the final stages of a terminal disease has no freedom. He has lost even the choice of the time and manner of his death. We can imagine another extreme - a being whose very form is undefined, a being created instantly with a limitless body of information available to it, towards which it has no prejudices, emotions, or other inborn predilections. This being's life might be the epitome of free choice because it would have no pre-set limits on its physical, mental, or emotional structure. However, as soon as the being made even one choice, it would have limited itself by that choice and would no longer be perfectly free. Freedom to choose is freedom to limit. If it could not choose what goal would be worth the loss of this perfect freedom, or if it were not motivated toward choice, its life could instead be a travesty of freedom: choice forestalled by the variety and freedom of choice available.

Communities face the problems of choice made extreme in the above examples. Their freedom of choice may be abridged by outside circumstance and internal structure; attempts they may make at conscious choice may flounder in a plethora of alternatives. The mechanisms by which communities resolve problems of choice are many and diffuse, but the explicit methods by which the community as a unit reaches decisions are usually called the political system. Let us examine the problems involved in reaching these decisions.

First, community consciousness of a

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A TEST FOR SOME

Music Vid Picks Up Added Chain Space

By JOHN SIPPEL

LOS ANGELES—More U.S. record/tape chains have joined the swing to video software. They include Record Bar, Moby Disc, Waxie Maxie's, Kemp Mill and Great American Music/Wax Museum.

These retailers are primarily carrying music video, spurred by customer interest in this program category and especially in "Making Michael Jackson's 'Thriller'."

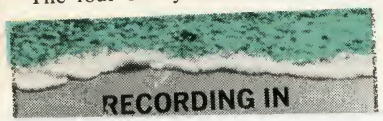
Biggest single group to begin stocking music video is a 40-store bloc of the 150-store Record Bar chain. Director of purchasing Steve Bennett says he is inventorying 12 titles. The chain's superstore, Tracks in Norfolk, has a full department of hundreds of rental and sale titles.

The four Moby Disc stores here and the two in Hawaii are stocking from 10 to 15 titles, owner Mark Ferjulian says. He is buying music videos from City 1-Stop.

The Michael Jackson video has been a good seller for the 20 Waxie Maxie's stores in the Washington-Baltimore area since just before Christmas, Dave Blaine confirms. Stores are still handling only the single title, but Blaine sees video playing a greater part in his chain's future.

All seven Believe In Music stores

(Continued on page 107)



Yes Vidclip Hits MTV In 15 Edits

By STEVEN DUPLER

NEW YORK—As part of a "total video concept" by directors Kevin Godley and Lol Creme, Yes' new video clip, "Leave It," has been cut

Cassettes Overtake LPs

CBS: Industry Made More Tapes In '83

By IS HOROWITZ

NEW YORK—Cassettes toppled LPs as the dominant prerecorded audio configuration last year, accounting for almost 53% of all album product shipped to the trade.

About 238 million prerecorded cassettes were put out to market in 1983, up 30.1% from the 183 million shipped the prior year, according to estimates made public here last week by CBS Inc. at a presentation before financial analysts.

During that same period, LP shipments dropped 14.1%, down to 207 million units from 1982's figure of 241 million. A minor factor in the album equation was the 1983 figure of five million units given for the fast-dwindling eight-track format.

The statistics cited by CBS, which also document a mild upturn of 1% in the cumulative number of all recordings shipped, are expected to closely parallel 1983 figures to be released by the Recording Industry Assn. of America (RIAA) in April. CBS executives are key participants

recordings shipped during 1983 at 581 million, compared to 576 million the previous year. It placed the value of all 1983 shipments at $3.699 billion at suggested list prices, up by 3% over the 1982 figure of $3.592 billion.

Singles shipped in 1983 were put at 131 million, down by 4.4% compared to the prior year's total of 137 million.

At the RIAA, president Stan Gortikov would neither confirm nor deny the CBS estimates. He reiterated that no official figures would be available until disclosed by the association's market research group.

Other data presented by CBS to the financial analysts predicted that the value of all recordings to be shipped in 1984 would come to $3.773 billion at suggested list, an increase of 2% over the 1983 estimate.

The company further estimated that international recording industry sales in CBS-served markets would total $3.661 billion in 1983 at wholesale prices, once all the figures are in.

(Continued on page 107)

CD Hardware Prices Dropping

By WILLEM HOOS

AMSTERDAM—Price cuts of more than 50% on Philips Compact Disc hardware here, described as "unique and historic," followed by sharp dips in retail pricing in the U.K., are part of the company's push to build CD sales throughout Europe.

Significant price cuts have also been recorded in the U.S., where the suggested lists of the Philips CD players, sold there under the Magnavox logo, have been reduced twice since last year's Christmas selling season.

Here, the Philips CD 100 range, cheapest player in the catalog, cost 2,199 dutch guilders (roughly $770) in March, 1983, when the CD system was launched, and now retails at just 999 guilders (around $350).

(Billboard, March 17).

Judge Marshall issued the minute order, which also instructed defendants to provide all evidence in the case to her by March 26, while the government has an April 6 deadline.

ing order against the [illegible] government agency argues that "the merger will remove a substantial competitor from the market and significantly increase overall concentration."

ations, including the most recent, the MCA/Motown deal, in its analysis.

"The post-acquisition HHI of 1648.2 approaches the threshold of highly concentrated markets and the resulting increase in the HHI of 267 points portends major competitive problems," the government contends. "The Justice Department has indicated that as a general proposition an HHI below 1,000 would suggest an unconcentrated market, an HHI between 1,000 and 1,800 would suggest a moderately concentrated one and an HHI above 1,800 suggests a highly concentrated market." The government says the acquisition would raise the industry's HHI to 1,684.2 from 1,351.2.

The consolidation would, the complaint avers, "increase likelihood of

(Continued on page 109)

Spring Markup Seen For House Audio Rental Bill

By BILL HOLLAND

WASHINGTON—The House version of the audio rental bill, H.R. 1027, is being scheduled for markup this spring in the Judiciary subcommittee on courts, civil liberties and the administration of justice, giving the recording industry its first gleam of light in an otherwise dark legislative tunnel in this cautious election year.

No date has yet been set for the markup of the House bill, introduced last year by Rep. Don Edwards (D-Calif.). But, according to subcommittee sources, subcommittee chairman Robert Kastenmeier (D-Wisc.) has given notice that he wants to move the bill. H.R. 1027 currently has 43 co-sponsors.

The Senate version of the bill, S. 32, introduced by Sen. Charles Mathias (R-Md.), passed full committee last June 16 and passed the full Senate in a unanimous vote June 28.

The audio rental bill is the least controversial of the rental and home taping bills now pending in the Congress. It requires the permission of sound recording copyright owners (record companies) before rental can be lawfully authorized.

The Senate version was passed with an amendment which also requires the permission of the copyright owner of the underlying musical works for rental through a compulsory license agreement similar to those between publishers and record companies, and will protect copyright owners should future technological progress make record rental a profitable undertaking for the music industry.

The House version does not yet have such an amendment, but a record industry source says that there are plans to introduce a similar feature during the markup sessions. Also planned is an amendment to spell out antitrust confirmation.

stantly increased status. CHUM-FM, in the process, has had to change to compete for the new music crowd in the market.

But, by increasingly programming imports, CHUM-FM has inadvertently set the pace for other AORs across the country. That, in turn, has created a record business nightmare.

Import-only product by Big Country, the Thompson Twins, Ultravox, Howard Jones, INXS, Tom Robinson and others has crept into heavy rotation on CHUM-FM. CILQ-FM has stayed away from the import glut, trying in recent months to corner the hard rock market, but CFNY keeps chugging along with a healthy dose of imports.

With two of the three AORs going at it, retailers have been rapidly adapting by increasing shelf space for

BILLBOARD COMPUTER/GAMES CONFERENCE

Meet Looks At Software Stability

By FAYE ZUCKERMAN

SAN FRANCISCO—The stability of the computer software industry, when compared to the still-volatile hardware field, and consumer indecision over how computer products can be used, were the key topics at Billboard's second Computer Software/Video Game Conference, held here March 7-9.

Wall Street analysts and market researchers, at the helm of the three-day event, reconfirmed the conference's tone when they agreed that computer software companies provide investment opportunities while hardware firms currently do not. Barbara Isgur of Paine Webber Mitchell Hutchins noted that hardware companies that gain a market niche of three-five years show investment potential. She said that IBM, Coleco, the new Mindset computer and the Japanese firms are all forces to be watched closely.

Further panel discussion pointed out that hard-to-use software products and confusing hardware design fueled consumer frustration with computers. Most panelists agreed that these complications are major stumbling blocks to the growth of both the hardware and software industries.

Software designers, acknowledging hard-to-use product, discussed the ways in which collaborative efforts for authoring software are bringing about finely tuned products. Don Bluth, a proponent of interactive laserdisk technology who is credited with the making of the first laserdisk arcade game, "Dragon's Lair," emphasized that this technology might pave the way for "interactive movies," with viewers controlling the destinies of a film's main characters.

Marc Blank of Infocom predicted that "artifical intelligence" will come to play a major role in his company's software products. Artificial intelligence will ultimately allow the computer to reason and process information, and conform to each user's style of interacting with the computer, he said.

During the panel entitled "Categorically Speaking: Entertainment, Education & Home Management Software," the subject of piracy piqued debate with mention of Microsoft's and Lotus' recent legal action relating to software theft.

International marketers noted software theft abroad. Nancy Garrison of Atari International pointed out that she solved one Atari "knockoff" problem by hiring the group responsible to design and convert

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News

GMA Week Focuses On Church

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and the "International Market." Gospel Radio Seminar panels included "Building Your Audience," "Sales Through Programming," "Production Techniques," "The Role Of Research" and "Playlists And The National Charts."

The Church Music Workshop included reading sessions during which ministers of music from a number of churches sampled some of the new music from publishers and discussed how best to develop their churches musically.

"We have the right people coming now," said Billy Ray Hearn, president of Sparrow Records. "It's become like the Christian Booksellers' Convention—a place you put on your calendar every year."

The addition of a full week of activities for those involved in churches underscored the thrust that gospel music has been making towards the church world for growth, as well as acknowledging that the church is an integral part of the industry. "It's really been advantageous to get the church music people involved," said Elwyn Ramer, head of the Church Music Session and of Lorenz Creative Services. "Most of the ministers of music don't get to do anything outside their own area, but here they get a better overall view of the whole industry and a taste of the gospel record business."

He added that there is a "potential for doubling what we did this year"—attracting more than 130 paid registrants and 11 publishers. Ramer noted this was the fourth year for the Church Music Workshop and that it had grown from 18 registrants (who had only one hour on one afternoon) to its current status.

The National Gospel Radio Seminar doubled its attendance over last year with 125 registrants. The advent of the single in gospel radio has revolutioned that industry, according to Jim Black, head of the NGRS and vice president of SESAC. "The sending of singles to a station instead of just sending an album and letting everybody play what they want has unified radio," he said. "Now there's a better chance for a big national record instead of just regional hits." Black also cited the decline of absentee owners as a major factor in upgrading gospel radio.

FLYING THE COUP—Lanny Wolfe takes home Dove awards for gospel songwriter of the year and gospel song of the year for his "More Than Wonderful." Shown from left are ASCAP's director of membership and public relations John Sturdivant, Wayne Erickson of the writer's music company, Wolfe and Connie Bradley, ASCAP's Southern regional director.

SECOND BILLBOARD CONFERENCE

Meet Views Software Stability

• *Continued from page 3*

Atari's product for distribution in foreign markets.

Moderated by Fred D'Ignazio, the high technology reporter for "Good Morning America," the panel stressed that the international market should be considered a number of individual territories. The needs of each territory should be addressed as separate cultural and, in some cases, linguistic entities, panelists said.

Electronic distribution and teledelivery to homes took center stage when Tim Baskerville of Video Marketing Game Letter moderated the panel, "A Step Beyond: The Evolution Of Delivery." David Lamb of LINK presented new research on teledelivery, revealing its slow acceptance.

Most agreed that high modem prices are hampering growth in the "communications" field. Paul Terrell of Romox countered that retail acceptance of electronic distribution is rapidly improving.

Industry veteran Ken Uston, chairman of Fun And Games, described the trouble he has getting certain software and hardware to work. He called for better software design, noting the importance of instructions, which are typically not included by electronic distributors.

Venture capitalists noted that they carefully pick and choose companies to back. Michael Katz of Epyx outlined his plight in obtaining several "rounds" of financial support. Bruce Davis of Imagic pinpointed the current market conditions for getting assistance when he said, "Our venture capitalists say there is virtually no chance of finding venture capital in this industry. There will be a lot of people dropping by the wayside."

These panels and others will be highlighted next week in Billboard's detailed conference coverage.

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Choosing A Personal Computer

By JOHN HEILBORN

IT WAS NOT that many years ago that computers were nothing more than gigantic adding machines that the government and big business used to keep track of all the millions of things that would perpetually get out of line. Most of us preferred it that way, and if things had stayed the same, we would have been perfectly content never to think about computers other than on those rare occasions when we'd hear about some poor soul getting a six-digit water bill from an electronic trouble-maker that had gotten up on the wrong side of it's diodes one morning.

But things didn't stay the same. Over the years, computers got smaller and cheaper, and these days, they are everywhere. They are in our classrooms and our supermarkets, under the hoods of our cars and even in the lightswitches of our homes. Our children feed them quarters at an alarming rate, and all we can do is sit back and discuss social change. But it is now almost 1984, and although we don't have "Big Brother" staring at us from the corners of our living rooms, the burgeoning message is clear: to survive, computerize. And we all ask how. Computers are much too complicated for the average person to understand, let alone use . . . right?

Wrong. It is not difficult to learn how to use a computer, however, you must ask the right questions and most of us typically ask the wrong questions. That is why we generally get such useless answers. For example, when entering a computer store, a customer (feeling very smart for having read an article on computers recently) might ask to see a computer that has 64K of memory, two disk drives and a dot matrix printer. The trouble is that these fancy parts are directly related to *how* the computer works, but are not important in terms of *what* the computer does (such as keeping track of your bills or helping you to type a memo). So the customer leaves the store having purchased a computer that meets the physical requirements that were specified, but that probably will not be able to perform any of the tasks for which it was purchased. It is not necessary to understand how a computer works, in order to buy one or to use one. After all, how many people drive cars and yet cannot tune them up. Similarly, it is not necessary to know how to program a computer in order to use one. Most of the applications a typical user will need are readily available as existing programs that can be run on the computer without any knowledge of programming.

The point is, to find out what you need to know about a computer you will need to ask what is can do and what programs it can run, not how it works. **Ken Uston's Guide to Home Computers** (Signet, $3.50) has been written to help you find out what you need to find out. It cuts through most of the unnecessary jargon surrounding computers and directs you to those terms that you'll need to know in order to find the right computer and programs to do your job.

"Malfunction! Malfunction!"

The book is divided into two major sections. The first discusses a wide range of computer software (programs) for home users. Each program is described quite thoroughly and Uston is careful to point out any positive or negative features that he feels might affect the useability of the program.

In the second part of this book Uston describes 18 of the more popular personal computers. These are covered with the same attention to detail as were the programs in the previous section. The computers range in price from the least expensive computer (TIMEX/SINCLAIR) to the most expensive computer (IBM PC) currently available for the home computerist.

Overall, this book is an excellent guide to purchasing a first computer, but if you use it, you should beware of those sections headed "You Should Buy One IF" and "You Should Not Buy One IF." These are basically opinions and for every computer user who agrees with Uston, there are certainly as many who would disagree.

While the pressure for an individual to buy a computer is high today, the pressure on businesses is even higher. The cost of doing business is going up each day, and the companies that will survive are the ones that are able to make the best use of their resources, and in this, computers are playing a key role. The trouble is, that although the potential gains obtained through computerizing are greater for a company than an individual, the potential losses are greater as well.

"Most of the applications a typical user will need are readily available as existing programs that can be run on the computer without any knowledge of programming. . . . To find out what you need to know about a computer, you will need to ask what it can do and what programs it can run, not how it works."

To avoid the more common pitfalls and make the transition to computerization a smoother one, **How to Buy (and Survive) Your First Computer** (Byte Books, $14.95) by Carolee Nance Kolve provides some excellent guidelines on how to plan for and select a business computer. The book is well organized and provides solid advice which can prove to be very useful in:

—determining if your company is ready to computerize.

—deciding what kind of computer would be best for your application.

—selecting software; choosing a computer vendor and,

—introducing

(CONTINUED ON PAGE 10)

JOHN HEILBORN, once a computer research and development engineer, now writes frequently about computing and is the author of *The VIC 20 User Guide* and *Your Commodore 64 Computer*.

Kids, Parents And Software

By FRED D'IGNAZIO

KIDS AND COMPUTERS!

The words roll off the tongue so easily. Kids and computers—they seem so natural together. At least that's what we think now. But this hasn't always been the case. In fact, it wasn't the case as recently as nine years ago. In 1974 if someone had told you that he thought computers were the natural toys and tools of children, you probably would have laughed in his face. "Preposterous!" you would have thought. "I don't understand computers, so how could my kids expect to understand them?"

But, as we know now, computers and kids are a match made in heaven. Still, they are a match that had to wait for the first home computers to appear.

The first home computer appeared in January 1975. That's when parents and teachers began bringing children and computers together. But some of us jumped the gun. We were already in schools showing kids how to operate big, mainframe computers and teaching them how to program.

Back in 1974, I was a programmer working on a mammoth Honeywell 6000 computer in the basement of the Pentagon, coding and decoding top-secret military systems. I guess it's safe now to admit what I was doing. My job was to program the computer to send soldiers' socks and underwear to Army bases all over the world.

Programming soldiers' underwear and socks is a more demanding job than you might imagine. One day I decided to call it quits, and I picked up a briefcase-size computer terminal and smuggled it out of the Pentagon. I took a city bus over the Potomac River and ended up in a mid-town elementary school. I hooked up the terminal, via a telephone, to a giant computer in Chicago. I spent the entire day, with the teacher's permission, teaching 5-, 6-, and 7-year-olds how to program and play computer games. It was one of the most exhilarating experiences of my life. After Snurkle and Hunt the Wumpus, it was hard to go back to socks and underwear.

The following year (1975), the first personal computer appeared—the Altair computer from the MITS Corporation in Albuquerque, New Mexico. And my daughter was born. I became fascinated with the idea of a personal-computer for a little kid (a very little kid—Catie was only a month old at the time.) My wife suggested that the book would be most successful if it were a picturebook adventure story like *Alice in Wonderland*.

I began the project immediately. But writing a book and

(CONTINUED ON PAGE 8)

FRED D'IGNAZIO, associate editor of *Compute!* magazine, reports regularly on family computing. He is the author of 15 books about computers and robots.

Kids, Parents and Software

(CONTINUED FROM PAGE 7

getting it published was a much harder task than I imagined. The book, **Katie and the Computer** (Creative Computing Press, $8.95, illustrated by Stan Gilliam), didn't appear until Catie's fourth birthday in 1979. (Since then, *Katie* has gone into six printings and is evolving into a series.)

Between 1979 and 1982, only a few new children's computer books appeared. Then, suddenly, the home-computer market exploded. By 1982, home computers could be bought for less than $200 apiece, then for less than $100 apiece. Before the end of 1983 there may be as many as 5 million computers in people's homes; and by the end of 1990, anywhere from 16 million to 38 million. Experts estimate that, in these homes, as many as 6 million to 8 million children are already using the computers. These children, and their parents, need books, and publishers are responding with dozens of titles. Here are some of the best books now available:

Computer Literacy for Parents

Mindstorms, by Seymour Papert (Basic Books, $12.95; paperback, $6.65). Papert's book on "children, computers, and powerful ideas" is already a classic. It is a delight to read. It is also the most humane, down to earth, and insightful guide on teaching children by using computers. And it is an armchair introduction to the children's computer language, Logo, which Papert *helped* to develop.

Reading and Understanding, by Roger C. Schank (Lawrence Erlbaum Associates, $19.95; paperback, $8.95). Schank is head of the department of computer science at Yale University and one of the leaders in the field of Artificial Intelligence. Papert focused primarily on learning math and science by using computers. Schank emphasizes language arts.

Parent's Guide to Computers in Education by David Moursund (International Council for Computers in Education, 135 Education, University of Oregon, Eugene, Oregon 97403, $3.50). Moursund is one of the leading figures in computer education for children. His little book (80 pages) is inexpensive, easy to read, and full of wise advice for parents.

A Parent's Guide to Personal Computers and Software by the editors of Consumer Guide (Touchstone/Simon & Schuster, $6.95). This is another inexpensive, short (64 pages), and easy to read book. It is comprehensive and full of detailed, practical, and up-to-date information.

Kids and Computers by Eugene Galanter (Putnam/Perigee, $7.95). The subtitle of this book is "The Parents' Microcomputer Handbook." Galanter is a pioneer in teaching children about computers. This book is a well written and thorough guide. It has several chapters that help families get started programming in the BASIC computer language.

Microcomputers: A Parents' Guide, by Kenneth P. Goldberg and Robert D. Sherwood (Wiley, $8.95). A very comprehensive book. Goldberg and Sherwood teach parents how to be well-informed, discerning consumers

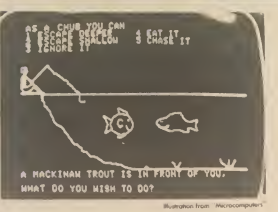

Illustration from "Microcomputers"

of home computers and software. They describe and highlight the important link between computing at home and computing at school. They compare all the major home computers and furnish lots of sample programs for the parent to examine and browse through.

Learning Disabled Students and Computers, by Merrianne Metzger, David Ouelette, and Joan Thormann (International Council for Computers in Education, $2.50). A uniquely helpful book. There are chapters on theory, concerns and misconceptions, software and hardware, and references.

The Computer Camp Book, by The Yellow Springs Computer Camp, Inc. (Yellow Springs Computer Camp, P.O. Box 292, Yellow Springs, Ohio 45387, $12.95). This is an omnibus reference book for all parents wondering which computer camp to send their child to next summer. It is also for parents who are wondering whether it is worthwhile to send their child at all.

Children's Computer Literacy Books

I have a secret to tell you: Children's books about computers aren't just for kids. They're for adults, too. Especially if you're just beginning. And especially if you have younger children. The books are written in over-sized type, and have lots of cartoons, humor, and color. And, best of all, the author doesn't rush you. You can read each book with your children and pretend that it's for their benefit. But you'll be learning just as much as they are. You won't feel any pain, and you will probably have just as much fun as your kids.

I know of five computer-literacy (introductory, non-programming) books that are suitable for preschoolers and early primary-school children: besides my own Katie books and Elizabeth Wall's **Computer Alphabet** (Bayshore Books, $8.95), I suggest **QWERTY's Alphabet Adventure** and **QWERTY's Number Adventure** by Shadow Lawn Press (Hayden, $14.95 apiece—price includes the book and a cassette that will run on an Atari, TI 99/4A, VIC, or Commodore 64; or a disk that will run on the Apple).

The QWERTY books are especially nice because they are meant to be used along with a computer. At bedtime the child is sitting in her parent's lap while the parent reads her a bedtime story. In front of them is their home

Illustration from "Kids and the Apple"

computer with a bright, colorful storybook picture on the display screen. At the end of each page, the child leans forward and presses the Return button on the computer to call a new storybook picture. And, while the parent is reading the book, the child is pressing buttons on the computer keyboard, busily learning numbers, shapes, and the letters in the alphabet.

For slightly older children (ages 5-11) there are already a number of good computer-literacy books, including:

Every Kid's First Book of Computers and Robots by David Thornton (Compute! Books, $4.95).

The First Look Book Series. Three computer-literacy volumes: *Sizes, Shapes and Flavors*, *Beeps, Whirs and Blinking Lights*, *Menus, Loops and Mice* (Dell, $2.95 each).

Understanding the Micro, by Judy Tatchell and Bill Bennett (Usborne Guide/Hayes, paperback, $4.95)

The Star Wars Question and Answer Book About Computers, by Fred D'Ignazio (Random House, $4.95).

All the above books have lots of colorful photos and cartoons set in large, readable type, and are up-to-date guides to the world of small computers.

There are also plenty of good computer-literacy guides for older children (ages 10-14). For example:

Microcomputers Can Be Kid Stuff, by Anna Mae Walsh Burke (Hayden, $11.95).

Computer Basics, by Hal Hellman (Prentice-Hall, $8.95).

The Creative Kid's Guide to Home Computers, by Fred D'Ignazio (Doubleday, $9.95).

A Dictionary of Computer Words, by Robert W. Bly (Dell/Banbury, $3.95).

Basic Guides for Parents and Children

Programming guides are most helpful if they are written for your brand of home computer. If you have an Apple, try to find books written for the Apple. Likewise if you have a Commodore 64, an Atari, a TI 99/4A, or whatever. Each computer is a little bit different, and each manufacturer's version of the BASIC computer language is slightly different—especially the most appealing commands, the ones that make pictures, sound effects, and music.

There are three wonderful exceptions to this rule. First **The Usborne Introduction to Computer Programming** (Usborne/Hayes Books, $12.95; paperback, $5.95). The Usborne Guide is unique. It is a humorous, colorful, imaginative introduction to computer programming in BASIC, but you don't even need a computer. It's a great book for you and your kids to read *before* you buy a home computer.

Next, there are the two very popular books, **Basic Fun** and **Basic Beginnings**, by Susan Drake Lipscomb and Margaret Ann Zuanich (Avon/Camelot, $2.25 each). The books are collections of dozens of short programs for children and their parents to type into their computer. The programs are of all sorts and come with names like KNOCK KNOCK, Flag, Baby Sister, Paper Route, Pizza, You Are a Detective, and The Great Magician. They consist of a few simple BASIC commands and have no sound effects or pictures, so they will work (with, perhaps, one of two changes) on all the popular computers.

If you have children ages 5-10 and you already own one of the popular home computers (the Apple, Atari, TI 99/4A, IBM, or Commodore VIC-20 or 64), there are two excellent books that kids can read themselves. The books come in several versions, one for each brand of computer. You should get both books: **Computers for Kids** by Sally Larsen (Creative Computing, $3.95) and **Computer Playground** by M. J. Winter (Datamost, $9.95). Both books are written in extra-large type and have plenty of illustrations (the (CONTINUED ON NEXT PAGE)

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Pleasures Of Programming

By JAMES G. WHEELER

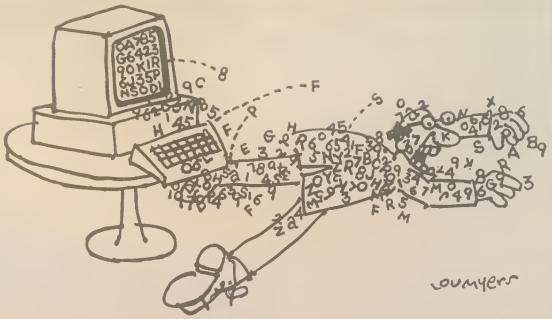

Illustration by Lou Myers for The Washington Post

WRITING THE BOOK that will lead a computer novice to self-taught programming is no light task. Computer programming as practiced by professionals is an abstract and mathematical endeavor, requiring formidable intellectual discipline and plenty of experience. While I hope that no would-be programmer has abandoned the effort in exasperation because of having picked the wrong book, some of the texts in print seem dreadful enough to cause that unfortunate effect (none of those will be mentioned here).

Most of the following books seem intended for the casual programmer, someone who might want to write programs for personal use, but who scarcely intends a career in computer science. Yet the bulk of the writers do not seem to have considered what such a reader actually needs to know. Many of the books err by starting with topics that are of little consequence to beginning programmers, but which traditionally are part of academic computer-science curriculums. Casual programmers should not need to know how to convert decimal numbers to hexadecimal, or how the insides of a computer are organized, or how to construct the circuitry that adds binary numbers together. Fascinating stuff, to be sure, but these topics are as inappropriate in a book on casual programming as a review of organic chemistry in a cookbook.

The successful books are the ones that teach not just a programming language but also the kind of thinking that goes into writing a program. The novice needs to learn how to represent information so that a machine can manipulate it, and he needs to learn how to construct algorithms that work. The challenge comes in finding a way to explain these things that is not bafflingly abstract. Most people need to have programming introduced with a common-sense approach, and the author's challenge is to find ways to anchor the abstractions of programming in the reader's intuition. Well chosen and abundant examples are essential, and the reader needs to be encouraged to work problems on the computer at every turn. It also probably helps to paint the challenges of programming in a positive light, encouraging exploration of what works and what doesn't and being prepared for the inevitable errors. This last point can be important; to someone who is new to computers, an error message can seem like a personal criticism.

The uninitiated are often puzzled and infuriated by computer jargon, and rightly so when it clouds a book intended for beginners. But jargon is an essential component of technical communication and it must be mastered, for plain English simply lacks the vocabulary to describe the new and abstract terrain of computing. **The Encyclopedia of Computer Terms** by Douglas Downing (Barron's, $6.95) is one of several guides to computer parlance now in print. Many definitions are accompanied by brief explanations written in nontechnical language, and beginners should find these helpful. Still, the choice of some "essential" terms is hard to justify—who cares that EDVAC was an experimental computer developed at Cambridge in 1949? Other definitions overlook the multiple meanings of many common terms: "base" is defined as part of a transistor, but its mathematical sense is ignored; "buffer" is explained as a hardware device, but not as a software structure. **Webster's New World Dictionary of Computer Terms,** by Laura Darcy and Louise Boston *(Simon and Schuster, $5.95)* defines a larger vocabulary, and much more accurately. Although it does not discuss definitions at length, the cross references are good and can field a clear sense of some fairly slippery terms.

Armchair BASIC: An Absolute Beginner's Guide to Programming in BASIC, by Annie Fox and David Fox (Osborne/McGraw-Hill, $19.95) lives up to its subtitle—it is a book for real beginners, particularly children. The authors have spent a number of years teaching programming

(CONTINUED ON PAGE 10)

JAMES G. WHEELER heads the system development department at STSC Inc., a Washington software firm.

Kids and Software

(CONTINUED FROM PAGE 8)

illustrations in Winter's book are colorful and especially imaginative and appealing to young children). Larsen's book is an introduction to programming in BASIC. Winter's is a wonderful collection of programs that are sure to interest children.

What if your family has a ZX81 or TS1000 computer? Then I recommend you buy Linda Hurley's **ZX81/TS1000 Programming for Young Programmers** (McGraw-Hill/Byte Books, $9.95). You and your kids should read Hurley's book together. When you're done, the whole family will know how to operate the computer and write madcap programs like Spiders in the Dark, Bonk, Owl Scoop, and Gotcha.

If you have older children (ages 10 to 14), I recommend another Datamost series: **Kids and the Blankety-Blank Computer** by Edward H. Carlson (Datamost, $19.95). The word "blankety-blank" is my own invention and is not in the title. If you and your family have a Commodore 64, look for the book entitled *Kids and the Commodore 64 Computer.* The books are imaginative, extremely thorough, and very, very readable.

Computer Fiction for Kids

We are entering a new era in children's books —an era of interactive fiction intimately linked to home computers. The child becomes an actor in the story and she gets to help determine its outcome.

Time Lost by Joseph C. Giarratano, Kris Austen Andrews, and Arlan Keith Andrews Sr. (Que Corporation, 7960 Castleway Dr., Indianapolis, Ind. 46250, $6.95). There are separate versions of the book for the TI 99/4A, TS 1000, Atari, and Vic 20. The front end of the book is a comic-book adventure. The back end consists of six programs that your child can type into the computer and play while reading the book.

Science Fiction Computer Storybook and **Mystery and Adventure Storybook,** both by Stuart and Donna Paltrowitz (Tribeca Communications, $4.95 each).

Murder in the Mansion, by Jim Cole (ARCsoft, $6.95). Cole's book is a potpourri of adventure-game programs (or, if you will, "participatory novels") written in Pocket-BASIC for the TRS-80 Pocket Computer.

If you and your family get tired typing in other people's mysteries and adventures, then you should consider inventing your own. One book that can help you get started is Frank Dacosta's **Writing BASIC Adventure Programs for the TRS-80** (TAB Books, $9.95). Dacosta wrote the book in TRS-80 BASIC, but many of the programs and all of the ideas can easily be adapted to run on other popular home computers. □

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Parents Choice Magazine · Spring '83

Boy. Fred was here Irene. Bud, Mary

For Computer Freaks and Fraidy Cats, or "A ROUND-UP of FRED's BOOKS"

David Stemple

When asked to write an essay about a book which had changed his life, my 14-year-old son, a voracious reader of all sorts of literature, chose *BASIC*, a programming language reference manual. For parents and kids who have not yet had an experience like this the books that follow may be even more enticing. They introduce, they broaden and they open paths in many directions — both in and out of electronic obsessions.

COMPUTERS
Karen Jacobsen. Children's Press, $9.25. Ages 7-10.

The simplest book I found starts with the arguable observation that you are a computer. After a brief history of mechanical counting and arithmetic, the concepts of binary numbers, computer programs, and microcomputers are introduced. Then the author discusses a few uses of computers, makes the assertion that computers do not get bored, and leaves us with the happy contention that in the future computers will be even better. All in all, this book does a creditable job of making a complex subject accessible to early readers.

MEET THE COMPUTER
Bruce Lewis. Illustrated by Leonard Kessler. Dodd, Mead, $6.95. Ages 7-10.

Another simple guide to computers for the young, this time with rather comfortable illustrations. Numerous applications are interwoven with details of how computers work internally. They are compared to washing machines, and contrasted with humans. Unlike Jacobsen, who assures the reader that he or she is a computer, Lewis states, "Because it is only a machine, a computer cannot think." I suppose this may reassure some people, but where I come from, it's known as carbon chauvinism. In spite of this flaw, I can recommend this book for young readers.

KATIE AND THE COMPUTER
Fred D'Ignazio. Illustrated by Stan Gilliam. Creative Computing, $8.95. Ages 6-10.

A picture book that uses fantasy to illustrate the inner workings of a home computer as it executes a picture-drawing program. Katie, whose father has just bought a microcomputer, falls into the picture screen and has an adventure inside the machine. Sound familiar? The story is somewhat contrived, and some of the analogies are ill-conceived (particularly a bug added for dramatic tension) but the illustrations are colorful and lively, and a young reader may find this book more engaging than either of those mentioned above.

HOME COMPUTERS
Scott Corbett. Photographs by Jane Corbett. Atlantic-Little, Brown, $7.95. Ages 10-up.

A straightforward introduction to computers for older children. Starting with some of the uses of computers, it covers hardware and programming, then discusses computer crime and abuse. It ends with a description of a computerized day in the life of an ordinary family of the future.

KIDS AND COMPUTERS: THE PARENTS' MICROCOMPUTER HANDBOOK
Eugene Galanter. Perigee/Putnam, $7.95. Ages 12-up.

By far the best work I have read on the subject of children and computers. The author, who is the director of The Children's Computer School, has produced a very readable treatment of microcomputers and programming which will open up this world to parents in a way no other book I have seen can. Nowhere else will a parent find such a cogent presentation of technical details combined with explanations of the cognitive and pedagogical aspects of children's experience with computers.

Organized to be read in parts or as a whole, this book can be read profitably both by children and by parents. For example, a child may read only the five chapters on BASIC programming and the microcomputer, while a parent may want to read only the marvelous introductory chapter and those on buying a computer, evaluating computer education, and the dangers of computers. If you read one book on computers, this should be it.

IT'S BASIC: THE ABC'S OF COMPUTER PROGRAMMING
Shelly Lipson. Illustrated by Janice Stapleton. Holt, Rinehart & Winston, $8.95. Ages 8-10.

The most widely used programming language, BASIC, is explored at a very simple level in a book which covers only the most few concepts of the language. Here the computer is presented as a machine that understands what to do when "spoken to" in BASIC. No internal details are given or needed. This may be the best way to encounter a computer for the first time; after all, we didn't learn about camshafts before we learned how to drive a car. What? You still don't know about camshafts? This may be the book for you.

BASIC FUN: COMPUTER GAMES, PUZZLES AND PROBLEMS CHILDREN CAN WRITE
Susan Drake Lipscomb and Margaret Ann Zuanich. Avon Camelot, $2.25. Ages 9-12.

Another approach to learning BASIC, using numerous graduated examples, forms the basis of *Basic Fun*. In twelve sections, consisting of sixty-one complete programs, the reader/programmer is led through most of the features of standard BASIC. The book is intended to be read as the programs are entered into a computer and run. The programs are presented with brief descriptions of the tasks they perform, from printing knock-knock jokes to creating tennis simulation games, and are followed by a few comments and the meanings of the more important program symbols. Not a literary masterpiece, but successful in its goal — teaching what it means to program a computer.

ELECTRONIC GAMES
Fred D'Ignazio. Franklin Watts, $7.90. Ages 10-up.

An interesting look at all the different kinds of electronic games — arcade, board, tabletop, hand-held, home video, and fantasy role-playing. The author gives a brief history of electronic games, explains what makes a good game, and tells us how to play better and how to shop for games. This book can be enjoyed by game players and non game players alike.

please turn to page 16

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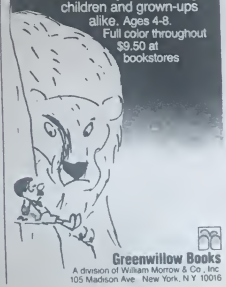
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DAVID STEMPLE is an associate professor of computer and information science at the University of Massachusetts, Amherst. He shares custody of an Apple computer with three children and a wife.

Computer Freaks...

continued from page 15

SECRETS OF THE VIDEO GAME SUPERSTARS
Len Albin. Illustrated by Ernest Haim.
Avon, $2.50. Ages 12-up.

Though this book is definitely written for game freaks, it also provides a fascinating glimpse of the strange world of arcade games for those of us who play them only occasionally or not at all. Parents who read this will get a better picture of what is going on at the arcades than they could by hanging out there. Most of the book is made up of sections on individual games and a breakdown of the strategies used by the "superstars" of the different games. Parents need read only a few of the twenty-six sections to appreciate the intricate strategies involved in excelling at one of these video games. The first two chapters on the psychology of the arcadeniks will probably be the most interesting for parents perusing this modern manual of warfare.

HELLO, MR. CHIPS! COMPUTER JOKES AND RIDDLES
Ann Bishop. Illustrated by Jerry Warshaw.
Lodestar/Dutton, HB $8.95, PB $3.95.
Ages 8-12.

A compilation of groaners, computer jokes for computer jocks. Example: "What do you get when you cross a computer with a rabbit? A computer which jumps to conclusions." I don't know what to say about this one except that I'm sure many young programmers will get a "chip" thrill out of it.

CHIP MITCHELL: THE CASE OF THE STOLEN COMPUTER BRAINS
Fred D'Ignazio. Illustrated by Larry Pearson. Lodestar/Dutton, $8.95.
Ages 10-up.

Here is a series of ten cases, all involving computers, and all investigated by Chip and his friends. Each case is completed in a chapter. The conclusion of each is placed in the back of the book to encourage the reader to solve the problem before reading the solution. As you can imagine, this structure strains a bit at the seams, especially in the earlier, simpler chapters. The latter half, which deals with difficult cases, is more entertaining than the first half.

THE CREATIVE KID'S GUIDE TO HOME COMPUTERS: SUPER GAMES AND PROJECTS TO DO WITH YOUR HOME COMPUTER
Fred D'Ignazio. Doubleday, $9.95.
Ages 12-up.

A reference book of ideas and sources. After explaining briefly what a computer is, the author explores several possible projects. These include writing game programs, building a robot, writing a program which can compose poems, acquiring and learning to use a poison-advice program, and using the computer to converse with friends who have disabilities which affect their ability to communicate. Throughout, further sources of information are given. This book could very easily open an important door for a young programmer.

The Author's Signature

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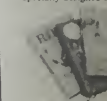

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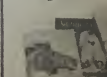

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Talk, Talk, Talk

continued from page 3

By far the most useful thing that television talk shows provide is self-help advice, about cooking, about health and medicine, about household economics. On those and similar subjects television is realistic about the lives of its audience and their genuine concerns. Yet for children, as for adults, talk shows are as much a source of misinformation as of genuine knowledge. Visiting "experts" rarely refer viewers to more detailed reading and study — except perhaps in their own newly published books — and hosts usually pretend that today's helpful hint can be understood by itself. In fact, few things can be more dangerous to the average householder than strict observance of a household rule, medical dictum or economic principle ripped out of context. More subtly, the dispersal of a little knowledge by television encourages lazy viewers to feel informed. Of course these people are not being informed. Little wonder that a child can come to believe that he can get all of his information easily, passively through television, and that he does not have to learn to read.

However negative the parent's view of talk shows, of course, the child is almost certain to spend time watching them. To a child, talk shows seem to speed the interminable process of growing up. But parents who have considered the messages that their children are likely to receive can at least consider the values of including the young in adult conversations. The more open and unmysterious adult talk seems to a child, the less likely the child is to turn to television talk as a surrogate form of inclusion — and the less likely the child is to absorb values that the parents would abhor. Speech is, after all, one of the most rapturous discoveries in everyone's life. Its sanctity is worth preserving.

Making an Investment

continued from page 4

Then there are all those people you work with within the publishing house besides the authors. There are the designers. I find I learn from those people all the time. Publishing is not stagnant; it is always changing. There are new faces, new people, new opinions and new trends. Thank God. One of the very important things is to be able to be flexible and keep up with them.

It's going to be interesting to see what happens [to publishing]. It's going to be interesting to see how important children are. We've

Computer fantasies

It's Alice in an electronic wonderland for computer expert Fred D'Ignazio

By CHRIS GLADDEN
Staff writer

It all started with a bump on the nose for poor, 2-year-old Catie D'Ignazio. She was sitting with daddy Fred at a computer terminal when she pitched forward and her head hit the screen.

It was a smart bump and Fred D'Ignazio, a computer expert, told his wife, Janet, about the incident. Janet D'Ignazio collects children's books. Images of "Alice in Wonderland" in the coomputer age came to mind.

"Why don't you write a book," she suggested to her husband. The notion took hold, and D'Ignazio, who looks like a very fit Richard Dreyfuss in "Jaws," worked for a year ith illustrator Stan Gilliam.

The result is "Katie and the Computer," the first of six children's books D'Ignazio has had published.

It tells the story of a little girl who falls through the terminal screen into a fairytale world inside a computer.

D'Ignazio wrote his first book four years ago in Chapel Hill, N.C., where he was working with and studying computers.

Today, he is a writer with 21 more book commitments and plans for a variety of writing projects apart from young people's books dealing with computers and technology.

The D'Ignazios recently moved into the cheerful, brick house on Carter road where D'Ignazio does his writing. Janet, who received a master's degree in transportation from the University of North Carolina at Chapel Hill, is assistant general manager of Valley Metro.

"Janet is the professional. She's the breadwinner," said D'Ignazio. "We looked at it (his writing) as a small business type of thing and figured we would have been in the red for three or four years."

Things are beginning to boom now for D'Ignazio, however.

"Computer Frontiers," a look at the people behind the computers, is due out soon.

It covers a wide range of individuals from Charles Babbage, a man who invented a clockwork computer 100 years ago and his assistant, Lord Byron's daughter, who played the fiddle as she danced around billiard tables and recited multiplication tables, to modern-day scientists such as J. Presper Eckert. He invented the first computer as we know it.

D'Ignazio estimates that the book cost him $1,500 in phone calls. Due out this fall is the beginning of a series about a young computer gumshoe. It's titled "Chip Mitchell: the Case of the Stolen Computer Brains."

Spring will bring "R2D2's Question and Answer Book About Computers" from Random House. It's scheduled to come out in a printing of 100,000.

D'Ignazio, 33, graduated from Brown University, took a master's degree in international relations from Tufts University, studied law, attended the Portuguese language school at Harvard and finally did graduate study in computer sciences at the University of North Carolina at Chapel Hill.

His computer background includes a job as a programmer with the Pentagon, where he recalls being in an ant-like procession of other programmers as they made their way to their cubicles. He later ran his own business; and than had a consultant's job in which he directed a staff of 50.

Each morning D'Ignazio gets up, does 150 deep knee bends in a cold shower, checks the daily schedule on his bulletin board and begins to write. He plans his day with time off for lunch and the soap opera, "Ryans Hope," to which he's addicted.

His study is a sunny upstairs room with a couple of computer terminals and a printer, neat book shelves with contents that reflect D'Ignazio's interests, and a variety of whimsical dragon figures.

Many of the books are science fiction and fantasy, a genre D'Ignazio has admired since he was a child. Others are on folklore, mythology and computer sciences. Soon, D'Ignazio hopes to begin writing science fiction and fantasy and also to write about the impact technology is having on today's culture. His first book for adults will be titled "How to Be Intimate With Your Computer."

D'Ignazio calls himself a househusband. He looks after Catie, now 6, and 3 and 1/2-year-old Eric, both well-acquainted with computers.

Catie can play complicated computer games and Eric can call up programs that include his favorite song — "Yankee Doodle" — and a computer face.

"Computers are being missold," said D'Ignazio. They are not glorified, file cabinets, calculators and pencil and paper. If they're used for that, you'll become dependent on these things. They'll be a crutch to do your simplest thinking."

The D'Ignazios use the computers mainly for brain-teasing entertainment — entertainment that doesn't always include video games.

"Video games are hand-eye coordination and quick reflexes. They don't stimulate creativity," said D'Ignazio.

He believes computers will be the next form of home entertainment after television and he foresees computers with personalities that will talk back to people.

The hunger for books on computers is ravenous, said D'Ignazio.

"I would recommend computers or technology for any freelancer who wants to break in. It would give them an entree into the big publishing houses."

Before a publishing outfit specializing in computers picked up "Katie," D'Ignazio figures he received more than his share of rejection slips. An agent has made the difference in getting D'Ignazio's other books published.

Roanoke may mark a new step for D'Ignazio.

"At Chapel Hill, everybody knew me as Mr. Computer. I have 13 big computers there that a friend is baby sitting."

While in Chapel Hill, D'Ignazio had an open-door policy. Neighborhood children from 5 to 17 were constantly in his house, playing computer games, watching little robots scurry around the floor and checking out books from the writer's informal lending library.

In Roanoke, D'Ignazio hopes to get away from being typecast as Mr. Computer. He plans to fulfill his obligations on his computer books for young people and then write other non-fiction and fiction.

"One side of me loves technology and machines," D'Ignazio said. "And the other side of me loves fantasy and makebelieve. "Words delight me. I'm a storyteller. I like to tell people about things."

Toddler daughter inspires computer books **C1**

Roanoke Times & World-News

October 2, 1982

Fred D'Ignazio displays one of several books he has had published (above) and works on 'The Computer Parade' at his computer terminal (left).

Staff photos by WAYNE DEEL

400 games evolve in three years

By FRED D'IGNAZIO

Nearly 3,000 years ago, Greek soldiers played checkers while Troy burned. Over in India they were playing chess. In Rome, the rage was gambling -- with dice.

Dice, checkers, and chess are still popular. What is more, they are computerized! A tiny electronic opponent has replaced the nobles and soldiers of yesteryear. Inside the games, a small silicon chip, etched with microelectronic circuits, declares the odds, enforces the rules, and hurls the mailed gauntlet at you, challenging you to hours and hours of exciting, unpredictable combat.

Dice, checkers, and chess are just three of the hundreds of games that can now be found in the crystalline memories of computers. With the Christmas season fast approaching, you might think about acquiring one of these games. You can obtain these games (and their supporting electronic paraphernalia) at local stores for a mere $20 on up to a walloping $2,000. It all depends on how much excitement, how much realism, how many bells and whistles you desire and can afford.

Electronic games (and electronic versions of older games) have only been around for about 20 years. In 1962, Steve Russell, then a graduate student at MIT, invented the first electronic game -- "Spacewar" -- which consisted of a computer program which ran on MIT's large [illegible] computer. Soon, computer programmers surreptitiously spent millions of dollars in computer time playing games like Spacewar on the large computers employed by government agencies, universities, and big companies. In the early 1970s, a key development took place when Nolan Bushnell, a student at the University of Utah, decided to scrap his "improved" version of Spacewar, and, instead, try out an early prototype of "Pong," a tabletop electronic paddle-tennis game. Bushness put his game in Andy Capp's Bar in Sunnyvale, California, came back 24 hours later to find his machine malfunctioning due to a hoard of quarters jammed into a tiny, overloaded coin box. Bushness went on to found one of the leading electronic game companies -- Atari -- in 1972, then sell out to Warner Communications in late 1976 for a reputed $28 million.

Bushness sold out at the right time. In 1977 the bottom dropped out of the electronic games market, and many of the 70 firms producing games cut back their line or discontinued production. In the meantime, miniaturization of electronic circuits proceeded at a whirlwind pace. At just about that time, it first became possible to mass market a hand-held electronic game.

In 1976, Mattel Electronics introduced a hand-held "Auto Race" game and a hand-held "Football" game. But the star entry was Texas Instruments' "Little Professor," match quiz game and calculator. The little computer brain inside the Little Professor has since become the standard for electronic hand-held games. By mid-1980 over 2[illegible] million tiny computers, known as "TMS1000s," had been sold.

We are now entering a brand-new era of electronic games spurred on by new computer-circuit miniaturization and by other new technologies in the areas of computer graphics (or "picture" making), sound and music synthesis, computer touch, vision, and, even, mobility. These new developments are spawning a new breed of electronic games and toys, including talking, singing dolls, robot "pets," absorbing fantasy games with intensely realistic effects, and a wide range of challenging sports games, logic games, and strategy games.

The games are sold in a variety of locations, including department stores, stereo dealers, discount houses, even "computer" stores. There are literally hundreds of companies and products flooding the market, vying with each other for the lucrative Christmas-season trade. But, beware! Just because a game has a computer inside doesn't make it good. The design and workmanship on many games is shoddy, at best. Also, it pays to shop around. You may find an individual game marked up or down $20-$30 from one store to the next.

Other concerns: First, most electronic games run on batteries, and many are energy gluttons, using up their batteries in only a few hours of play. You should watch for features such as "automatic power down" (where the game shuts itself off) and A-C adapters that allow you to bypass expensive batteries and plug your game into a nearby electrical outlet.

Second, scrutinize the game's overall construction and especially its display. How bright is the display? How readable? How big is it?

Third, what kinds of sound effects does the game make? Beeping and buzzing is fine, but loud repetitious sound effects eventually become irritating and unnerving for you and your kids.

Fourth, is a cheaper, equally playable non-electronic version of this game available? For example, Milton Bradley's electronic Battleship (for $30) is really just a rehash of its popular board-game Battleship (for only $10).

Fifth, is the game sufficiently challenging, fun, and exciting?

Electronic Games

BEFORE	AFTER
Games ran only on big machines	Now games come in hand-held, board, table-top, and TV models
"Action" consisted of long passages of explanatory text	Now action is portrayed in realistic, first-person ("I am there") 3-D graphics
Small black-and-white messages	Now 16 or more colors are available in 8 levels of intensity
The display was static	Now the display is often animated, changing right before the eyes
The game was silent	Now we have sound effects and computer-generated music

Many "lifestyle" (biorhythm, bicycling, astrology) computers require no dexterity and no special knowledge to use. They have a limited repertoire, offer no challenge, and eventually become tedious and boring.

Sixth, is the game adequate for what it attempts? For example, there are many small hand-held computers which offer "multiple" games, user "programming," "fancy displays," and the like. Often these little computers cost anywhere from $70 to $150, yet they suffer from small, cramped keyboards and screens, poorly-written instruction booklets, and a dearth of features commonly offered by the bigger game computers (the TV games and the programmable game computers). For example, after you've spent an hour programming in a spiral light display into the Logic T.E.A.M.A.T.E. computer, it is frustrating to turn the computer off and know that it is automatically erasing your entire program from its memory.

With the exception of the arcade games (which cost 25 to 50 cents to play, and which, at $1,000-$5,000 apiece, are unlikely candidates for Christmas and Hanukkah gifts), here are, in my opinion, some of the better electronic board, tabletop, and hand-held games.

Memory-Testing

Simon. Milton Bradley. $30 Tabletop. Simon generates patterns of musical tones associated with different colored panels. Simon flashes the lighted panels and sounds the tones. Can you repeat the pattern? (The patterns vary from simple to very complicated.) There is even a "Super Simon" out now.

Computer Perfection. Lakeside. $30. Best for kids. 4 games. 1-2 players. Tabletop. Sound-and-light game like Simon.

Target

Code Name: Sector. Parker Brothers. $40. Adult and Kids. 1-4 players. You and other players pilot destroyers around the ocean. Your job is to seek and destroy an unseen underwater enemy submarine.

Sports

Wildfire. Parker Brothers. $35 For kids who like pinball. 2 games. 3 skill levels. 1-4 people. Hand-held (2 hands!). Some minor problems. Still the best electronic pinball game I've seen.

Head-to-Head Baseball. Coleco. $46. Kids and adults. 2 skill levels. 1 or 2 players. Hand-held. The best hand-held baseball game. The most options. Uncommon feature: The computer doesn't choose the pitches, you do! You and your human opponent actually play "head to head."

Football II. Mattel Electronics. $39. Adults and kids. 4 skill levels. 1-2 players. Hand-held. The most versatile hand-held football game, I think. Features include sound effects, option to pass, and kickoff at the beginning of each half. Unfortunately (when you play with a friend), the computer always controls the defense.

Strategy

Electronic Detective. $37. Kids and adults. 1-4 players. Tabletop. You're a detective in a large city. Out of a "community" of 20 people, one is murdered, and the other 19 are suspects. It's your job to track down the murderer and bring him (or her) to justice. If you make a false accusation, you're out of the game.

Word and Math Quizzes

Dataman. Texas Instruments. $30. Grades K-5. Hand-held. Teaches arithmetic fundamentals.

Brain Baffler. Mattel Electronics. $45. Kids. Large hand-held. Seven popular word games and number games.

Speak & Read. Speak & Math. Texas Instruments. $50-$75. Kids. Hand-held. New entries along the lines of TI's popular talking Speak-&-Spell educational game. All three games have several extras you can purchase, including numerous "pop-in" lesson cartridges, an ear phone (for use in a library or classroom), an A-C adapter plug to save you money on expensive batteries, an auto power down, and Japanese-language versions.

TV (Video) Games

Hand-held, tabletop, and board computer games have small keyboards, small screens, and a relatively limited number of selections. TV -- or "video" -- games, on the other hand, often come with a large keyboard, several game consoles, game paddles, and joysticks. You hook them up to your wide screen color TV. And, most important, the TV game manufacturers offer a large and (hopefully) growing number of available "game packs" -- packaged game programs stored on tape cassette or ROM (computer "Read Only Memory") chops. Typically, a TV game costs from $100 to $200, game paddles cost around $20 apiece, and new game packs cost from $10-$30

(SEE PAGE 3A)

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Robot toys in future

(FROM PAGE 2A)

apiece (about $20, on the average).

There are a number of good TV games available, including Bally's Arcade, Magnavox Odyssey, Coleco's Arcade, and Mattel's Intellivision. My personal favorite, however, is Atari's Video Computer System which costs around $160. The Video Computer has an unusually large selection of game cartridges, it is reliable and easy to use, the games are challenging and fun to play, the graphics and sound effects are realistic, and there are numerous options and skill levels associated with each game.

Programmable Game Computers

The only real difference between TV (Video) games and programmable game computers is that programmable computers enable you to write your own games. You can still plug game packs with packaged game programs into your computer. But now you have the option to rewrite a "canned" game or invent a totally new game all on your own.

This is a wonderful feature. You might create a new game program (in a computer language like BASIC, PASCAL, or SMALLTALK) just for your own use or your family's enjoyment. Or you might come up with something unique and consider advertising it in the electronics, hobbyist, and small-computer magazines. In fact, many of the most exciting new computer games, employing sound effects, computer music and dazzling color graphics, were first created by people who originally invented the games for their own entertainment.

There are a number of good "game" computers at widely varying prices. Most allow you to easily "plug in" game cartridges but do not come with a picture screen. However using an "RF Modulator" attachment (for about $30), you can hook the computer up to your family's color TV.

Among the computers you should seriously consider are: (1) the new TRS-80 Color Computer from Radio Shack ($399); (2) the new VIC computer from Commodore Business Machines ($300-$400); (3) the Imagination Machine from APF Electronics ($599); and (4) the Apple II Plus computer from Apple Computer Company ($1,200-$1,500).

Again, my personal favorite is the Atari -- either the lower-priced Atari 400 ($600) or the higher-priced Atari 800 ($1,000-$1,600). Atari computers feature excellent high-resolution (realistic) color graphics, sound effects ranging from explosions to Phasers, machine guns, and airplane motors, four octaves of musical notes that can be arranged in up to 4-part harmony; a wide selection of plug-in game cartridges and accessories; the ability to double as a workhorse (secretary or bookkeeper) for your family or small business; and, last but not least, the marvelous new Atari game cartridge -- "Star Raiders!"

The other night, after my wife and two small kids had gone to bed, I slipped into my darkened study, [illegible] old SONY TV and pressed the "on" button on my Atari 800. I inserted the "Ster Raiders" cartridge into the top of the computer, pressed the "Start" button on the keyboard, and the picture screen came to life. I was in the nose of a battle cruiser hurtling through deep space. I could hear the roar of my ship's engines, the "WHOOSH!!!" of meteors and asteroids as they passed dangerously close to my ship. The screen flared flame red! An alarm bell sounded. My ship had sustained a hit from an enemy cruiser. My shields were down. There! On my screen! I could see the Zylon ship closing in fast for the kill. I fired a photon torpedo. Missed! Only one chance left: I engaged my hyperspace drive and warped out clear across to the other side of the galaxy. Had I been followed? Anxiously, I looked out the "window" of my ship. No Zylons. I had escaped. But my relief only lasted a moment. Whirling and roaring toward me was an immense ball of fire -- a comet! It would incinerate my ship unless I acted fast.

Hours and hours later, in the wee hours of the morning, after being wiped out by comets and Zylons, after achieving the dubious distinction of being posthumously awarded the title of "Garbage Scow Captain" five times, I finally, wearily, switched off the computer and stumbled off to bed.

Traditional Games

A number of the "classical" games -- including bridge, backgammon, checkers, and chess -- have been computerized. You can play them on video games and programmable game computers, but they are best realized as special electronic "board" games. There are numerous models to choose from. I recommend that you look at Fidelity Electronics' Voice Chess Challenger ($350). This deluxe chess-playing computer is a consistent winner when competing against other computers. It offers nine levels of play (plus an Infinite Level!), it duplicates 64 of the world's greatest games, it can enter a teaching mode to help you improve your game, and it can talk to you. Furthermore, unlike most chess-playing computers, it senses every move you make and records each move automatically.

If you enjoy playing bridge, you should look at Fidelity's Voice Bridge Challenger ($329). The Bridge Challenger talks to you, it can play as your partner (one hand), as your opponents (two hands), or all three hands against you.

The Future

There are more interesting trends than can possibly be mentioned in this article, but here are a few. First, watch for more mobile, robotic games in the near future. People will be able to program robot "players" of widely varying shapes and sizes to engage in physical or intellectual combat. Robot precursors include the Turtle from Terrapin, Inc. ($400 as a kit, $600 assembled); and, far cheaper, the Big Trak robot tank from Milton Bradley ($45).

There are a host of new computer-assisted fantasy role-playing games that are now appearing on TV games and programmable game computers. These "Adventure" games, spawned by the popular "Dungeons & Dragons" games, borrow many techniques from "spacewar" games, including 3-D animated color graphics, sound effects, and music. You play the part of a hero exploring a world of fantasy, of the past, or of the far future. To complete the game successfully, you must solve puzzles and battle fearful dragons for glittering treasure hoards.

Tape cassettes or flexible disks with the game programs run anywhere from $7 to $50, or more. Two best buys here include Mike Denman's new TRS-80 and Apple II Death Maze 5000 adventure games, and Scott Adams' original Adventure game for $25.

In the near future "adventure" games will branch out from heroic outer-space and medieval fantasy. We'll see more historical, mystery, suspense, inter-personal, and even sexual themes: in a recent ad for "Interlude" from Syntonic Software Corp., a scantily clad woman, lounging on satin sheets, fondling an Apple computer, asks, "How's your love life?"

In the near term, the big news in electronic games are the "Talkies," computer games that talk and play music. Two years ago, Texas Instruments produced Speak & Spell, the first educational talking toy. But Fisher-Price has the first computerized talking doll, and Milton Bradley has introduced the first talking hand-held game. The doll, "Baby Soft Sounds," speaks 16 words, cries, and hiccups.

Milton Bradley's hand-held talking toy, "Milton," is a word and phrase guessing game with 18 phrases programmed into its computer ROM (Read Only Memory). Milton's robot-like voice is con-

(SEE PAGE 7A)

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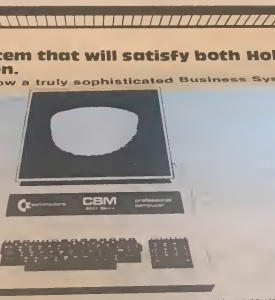

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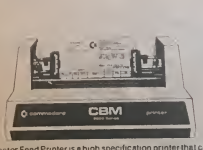

The Tractor Feed Printer is a high specification printer that can print onto paper (multiple codes) all the CBM* characters -- letters (upper and lower case), numbers and graphics available in the CBM*. The tractor feed capability has the advantage of accepting mailing labels, using standard preprinted forms (customized), cheque printing for salaries, payables, etc. Again, the only connections required are an A/C cord and CBM* connecting cord. The CBM* is programmable allowing the printer to format print for width decimal position, leading and trailing zero's, left margin justified, lines per page, etc. It accepts 8 ½ paper giving up to four copies $795.00

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VICKERS

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Village Cable wires Chapel Hill in 10 months

By COOKIE McGEE

Why the little town of Chapel Hill, pop. 37,000, should have the most extensive cable television system in the State, and perhaps more advanced than in much larger metropolitan areas, and why it should be cornering the audio-visual home entertainment options is a question no one seems to be able to answer.

Certainly James "Jim" Heavner, upbeat local radio-television personality, educator, and entrepreneur doesn't know, except that he saw the opportunity and seized it.

The result, Village Cable, is a 35-channel television access with everything from family and Christian programming, to all day, all-night news, X-rated movies, continuous cartoons, or Congressional filming and an FM stereo system of 22 channels, all built in a record 10 months that experts said couldn't be done.

But, Heavner said that after the town of Chapel Hill gave its approval, he placed top priority on getting the system laid so that every home in the city limits of Chapel Hill is passed by a cable. 3,000 subscribers are now signed up.

Raleigh and Durham each have only 13 channels each.

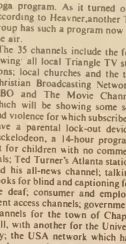
Heavner, president of The Village Companies and owner of the home of Louise and the late Governor Luther Hodges leaned back in his big office, magazines piled carefully everywhere and told this story.

"I had read about the emergence of cable, then two and half years ago, in February, there were two undefeated Junior High School basketball teams causing intense interest.

"About 300 families would have wanted to hear the game, and another 10,000 that didn't care. I couldn't justify a play-by-play radio broadcast, but if we had a cable, we could do it down the audio band. I asked myself, should we be the people to put in cable?"

The answer developed after a laborious process which included four or five months of study and an appeal to the town council involving 12 months of research and planning. They even suggested a yoga program. As it turned out, according to Heavner, another TV group has such a program now on the air.

The 35 channels include the following all local Triangle TV stations; local churches and the the Christian Broadcasting Network; HBO and The Movie Channel which will be showing some sex and violence for which subscribers have a parental lock-out device; Nickelodeon, a 14-hour program set for children with no commercials; Ted Turner's Atlanta station and his all-news channel; talking books for blind and captioning for the deaf; consumer and employment access channels; government channels for the town of Chapel Hill, with another for the University; the USA network which has black entertainment; C-span and



JIM HEAVNER

British programs, plus programs for senior citizens and on and on.

As an example of what cable can do, Heavner noted that the UNC-Oklahoma game was aired five times in one week. "We'll have lots of soccer," he said.

The FM stereo service is unique in North Carolina, and includes the fine arts station in Chicago. He turned the dials quickly on both the TV and the FM channels to demonstrate that no quality was lost on any program, no matter where it originated—Atlanta was as clear as Raleigh.

Heavner would not say he had cornered the home entertainment market, but he did say he would be glad to go into the Western edges of Raleigh to service those areas of Wake that Cablevision has not met.

Electronic games

FROM PAGE 3A)

descending, high-pitched, and hecking. For example, if a player makes an obviously wrong guess, Milton cries, "Absurd!"

Voice technology is quickly evolving. National Semiconductor recently announced its set of "Digitalker" computer chips that faithfully reproduce any speaker's voice. The firm has already received many orders from electronic game manufacturers for use in their next round of computer games.

Game picture-screen technology is also evolving rapidly. Hand-held games, for example used to employ rows and rows of LED. (Light Emitting Diodes) to construct the letters and simple pictures on hand-held game screens. Now several companies, including Milton Bradley and Tomy have perfected new LCD (Liquid Crystal Display) screens, like those used in digital watches and pocket calculators. Also, Bambino has introduced games using "vacuum flourescent" display technology. Bambino's new picture screens show realistic game figures simulating life-like action. For instance in Bambino's Boxing, the boxers throw punches, they dance, bend, weave, and duck. They throw jabs, and crumple convincingly if knocked out.

In the future, are electronic game prices going to drop? Unfortunately, no. Even though the computer components in the games are becoming less expensive, the price of plastics and precious metals in the games are rapidly increasing. Thus, you'll probably see a gradual increase in the overall price of the games. On the bright side, each year, at only a slightly higher price, the games will be significantly more realistic, sophisticated, and versatile.

It's also good to know that this year you have 400 more games to choose from than there were ago, and that more than half of last years games were good enough—despite increasing prices and rapidly advancing technology—to be offered again this year.

Editor's note: Tom Digiarolo is a

instructor who is currently teaching an extension course on small computers at UNC-Chapel Hill.

He is the author of "Katie and the Computer," a full-color picture book teaching young children about small computers. "The Creative Kid's Guide to Home Computers," a book of computer games and projects, and "Small Computers: Exploring Their Technology and Future" will both be published in the spring of 1981.

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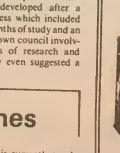

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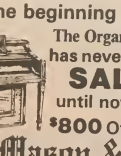

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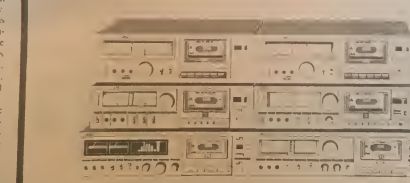

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